KEY TO MUSICIANSHIP

CHRISTINE TROTIN

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By

CHRISTINE TROTIN

A clear and interesting explanation of all the fundamental rules of music

Dedicated to the adult American Student

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By
Christine Trotin

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PREFACE

Music is the art of combining sounds in a way agreeable to the ear or interesting to the mind.

This double definition is necessary in order to express two different opinions in the matter because, while the old-fashion melodious music is not especially interesting to the mind of modernists, modern music is not always agreeable to the ear of the partisans of the Old School.

Besides being an art, music is also a language expressing ideas and sentiments and, like all languages, it has its grammatical rules which are absolute; to tamper with them would destroy the thread binding the notes together and would consequently alter the meaning of the musical composition. The study of the elementary rules and their application through the voice by solmisation constitute what is called "Solfège"; more advanced work is "Harmony" which is the science of chords leading to composition. The result obtained by the complete mastery of both Solfège and Harmony is "Musicianship"; the more thorough the musicianship, the greater the artist.

Unfortunately, in America, Solfège is not given as important a part in the education of the young as it should. In France, any child out of Grammar School knows thoroughly all the elementary rules of music and sings at sight quite fluently. Such is not the case with the American student; he starts right away with the study of an instrument or the voice, then, after a few years of slow and strenuous progress, he finds himself all of a sudden at a standstill, the inner meaning of music seems to elude him; he cannot grasp quickly the intricacies of the rhythmic combinations which have a paralyzing effect upon him, the fine points of interpretation escape him and after a while he comes to realize that something is wrong somewhere. In his anxiety and determination to acquire what is missing in him, he turns to Harmony, thinking that the knowledge of that Science will remedy his troubles, but Harmony is already the second story of his musical structure, the foundation and first story do not exist yet, except for a few beams here and there, consequently, how can the building hold out? Soon, the young student realizes that he has followed the wrong path, but somewhat bewildered, he does not know where to turn next, and it is to help him out of his predicament that I have written this book.

My aim has not been a literary one, far from it; the language that I use is the plain phraseology that any teacher would employ in giving a lesson. It may be too that, at times, the reader will realize that I have been thinking in French while writing in English for which I ask, in advance, one's indulgence.

But if, through its clarity and thoroughness, this treatise succeeds in initiating the American Student to the scientific side of the Divine Art, I will rejoice at the thought that I have fulfilled my mission as a humble member of the Musical Brotherhood of the World.

CHRISTINE TROTIN.

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CONTENTS

PAGE

PREFACE iii

MUSICAL NOTATION
Its Evolution from Antiquity to Our Present Day 1

MODERN NOTATION
Staff—Ledger-Lines 8
Clefs 10
Figures of Notes 12
Rests 14
Ties 15
Dotted Notes—Dotted Rests 16
Couplets 16
Triplets 19
Sextuplets—Double Triplets 21
Odd Divisions 23
Alterations 24

RHYTHM—TIME 28
Simple Measures 31
Compound Measures 32
Odd Measures in 5, 7, 9 and 11 Beats 36
Accents 38
Syncopations 39
Beating of Time 41

MUSICAL SOUNDS 42
International Pitch or Diapason—History of its Evolution 43
Steps and Half-Steps 45
Enharmony 47
Intervals—Simple and Compound 48
Intervals—Consonant and Dissonant 52

SCALES—THEIR SCIENTIFIC ORIGIN 53
Major Scales 54
Tetrachords 58
Key Signatures with Sharps and Flats 62–65

MODES—ANTIQUE AND MODERN 69
Minor Scales 70
Relative Scales 75
Corresponding Scales 77
Rule to Determine Whether a Composition is Written in Major or its Relative Minor 81
Chromatic Scales 83
Enharmonic Scales 84

PAGE

CONSONANCES AND DISSONANCES—BIRTH OF HARMONY. 87
Chords of Fifths (Triads) 89
Chords of Seventh 92
Modulations 96
Transposition 108

GENERAL RULES ON INTERPRETATION
Tempo Marks—Metronome 111
Expression Marks 116
Musical Terms Most Generally Employed and Their Signification 118
Accentuation 119
Abbreviations Used in the Writing of Notes 123
Notes of Embellishment (Graces) 124

APPENDIX—Classified Information on many types of Musical Compositions constantly referred to, including a Definition of Absolute and Program Music. Classical, Romantic and Modern ..... i-x

PART I

MUSICAL NOTATION

History of its Evolution from Antiquity to Our Present Day

Musical Notation is the art of representing musical tones by means of written characters.

Modern music is written with signs called *notes;* according to their shape they represent *durations* and according to their position on the staff they represent *sounds*. In Anglo-Saxon countries, England, America, Germany, etc., notes are designated by the first seven letters of the alphabet: a–b–c–d–e–f–g, but in Latin countries, France, Belgium, Italy, Spain, etc., notes are called by the following syllables: do–ré–mi–fa–so–la–si; the *do* corresponds to the *c*, the *ré* to the *d* and so forth.

The simplicity of the name and of the shape of the notes as well as of the staff on which they are written seems to us, in our day, perfectly natural and one can hardly realize that to arrive to that simplicity it has taken centuries and centuries of struggle and of what appeared at the time as a hopeless fight against tremendous odds. The history of that evolution is an interesting one.

In Antiquity music was a most complicated art; there were hundreds of signs to express the different sounds and their duration; some of them were Greek letters either vertical, horizontal, oblique or upside down; others were mere little dots, which meant lower or higher tones according to the distance that separated them from the words written underneath on a straight line.

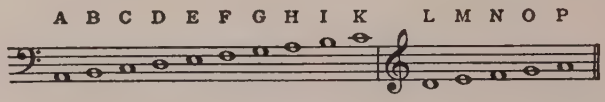
One can realize the difficulty of such a system which was more or less a matter of guess work on the part of the interpreters and which meant infinite pains in the mastering of a new composition. But there was no reading at sight in those days; music was confined altogether to the Church, one priest was taught orally by another priest and then, in turn, he imparted his knowledge to the next, and so on. Thus it meant a matter of a lifetime of work for each of them, the general public having no opportunity for the study of so intricate an art.

During the period which links Antiquity to the Middle Ages, little progress was made in Musical Notation. That was indeed the Dark Ages.

Still, at great intervals, dominating personalities rose from the surrounding dimness, standing as milestones along the path to mark the slow but definite evolution which was taking place. One of these was *Saint Ambrose*, Bishop of Milan in the 4th Century. He was a musician of marked talent; some of the hymns that he composed, known as the Ambrosian chants, are still sung in the Roman Catholic Church at the present time especially his "Te Deum

Laudamus." Saint Ambrose used in his compositions a much more varied rhythm than any of his predecessors or even than his successors during a considerable period of time.

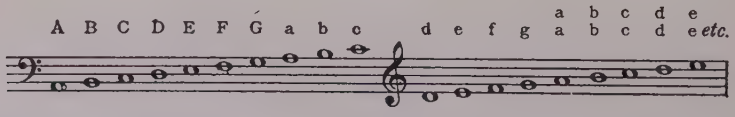
In the 5th Century came *Boetius*, a Roman philosopher of profound knowledge on every subject; he was the first to write a treatise on Musical Theory which was considered so thorough and of so much value that for centuries it was used as a text book in the English Universities of Oxford and Cambridge. It is to Boetius that is attributed the invention of the musical notation by Latin letters. The first fifteen capitals were used, starting from the *A*, two octaves below what is called in our day *middle a* and which was then called *P;* they naturally skipped the "J" as it did not exist in the Latin alphabet.



Neither the staff, the clefs, nor the round notes were in existence at the time; they are used in the above example only to make the matter clearer from a modern standpoint.

One century later another light appeared in the musical world in the person of *Pope Gregory the Great* (542–604 A. D.). It was he who re-organized the music used in the liturgy. He also composed quite a number of chorals himself. This type of composition is known at the present time under the general name of *Plain Chant* or *Plain Song* and is used in the Roman Catholic and Anglican churches; contrary to the Ambrosian chants it is absolutely devoid of rhythm. It is said that the finest and most sublime specimen of its kind is the "Exultet" which is still sung during Holy Week in the Church of Rome.

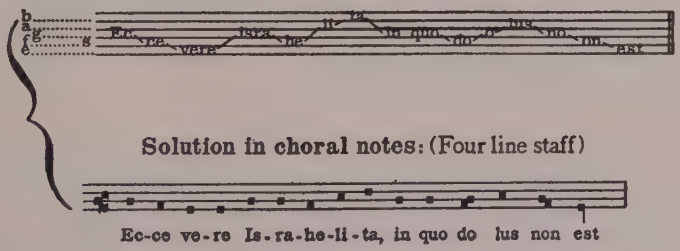
In order to propagate this new music, Pope Gregory created a School in Rome, the first of its kind, where choristers were thoroughly trained and from there were sent to different parts of the world; he also simplified the musical notation invented by Boetius by reducing the number of letters to seven, the first octave being capitals, the second small letters, the third octave double small letters as indicated in the example below.



After the death of Gregory the Great a long period went by without any special progress being made; apparently the evolution was at a standstill until the 9th Century when music was suddenly given a new impetus under the reign of the famous French Emperor Charlemagne whom Napoleon the First

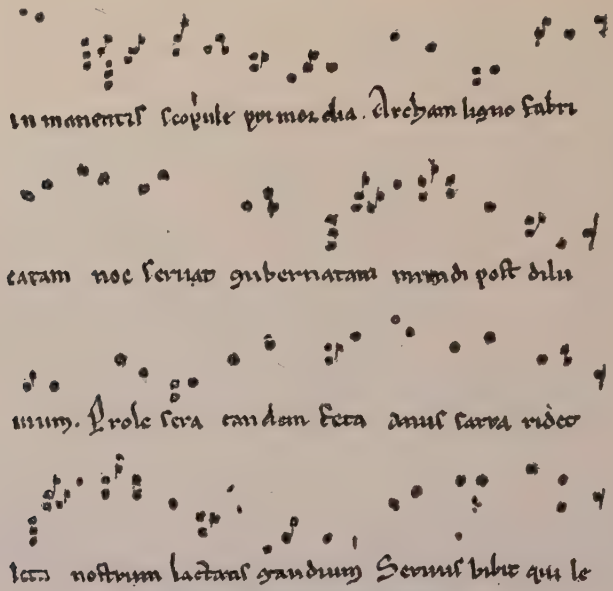
regarded as his only prototype among the whole list of kings who had sat on the French throne. His mind was much ahead of his time, his genius for reform and organization made itself felt not only in political and religious affairs but also in education in which he gave music a very important place. According to historians he had no use for anyone who did not know how to sing. He founded two music schools which he kept under his own and rather exacting supervision. No doubt it is from them that the idea originated of having conservatories under governmental control which system exists now in most of the European countries.

The schools organized by Charlemagne, one in Soissons, the other in Metz, were the inspirational centers of gifted musicians whose talent shone brightly throughout the mediæval period. Among them was the famous Benedictine monk named Hucbald (840–930) who wrote a treatise on music which had great value and which helped considerably in the development of musical notation. He was apparently the first to use lines as though they were the strings of a lyre, each one producing just one sound like all the instruments of Antiquity; those sounds were separated from each other either by whole-tones (whole steps) or by semitones (half-steps); in the case of the latter, Hucbald decided to put an *S* (meaning *s*emitone) at the beginning of the line which corresponded to the string producing the higher sound thus to indicate that the distance between that sound and the sound below was to be a semitone. No notes were actually written, only the words were set between the lines and their movement determined the fluctuation of the melody. The following example will give to the reader an idea of it:



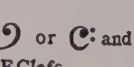
Still that system was apparently not adopted by the rest of the musical world, remaining confined to the particular use of Hucbald himself and his own pupils; but the fundamental idea of it became eventually the basis of our own modern staff.

Just about that time they were using characters called "neumes" resembling very much our present-day shorthand. These neumes did not express single sounds but groups of sounds on the order of the turn; according to their shape they expressed rhythm and according to the distance which separated them from the words, they expressed sounds:



NEUMES (Xth CENTURY)

Once in a while an attempt was made to improve the situation; first, someone thought of drawing above the text a horizontal line to which he gave the name of *F;* it was painted red in order to make a vivid impression of the mind of the executant who was supposed to give the same sound to all the characters written on that line; at any rate, this was a little start toward something definite. Later on, another line appeared above the other; this one was painted yellow and given the name of *C.* Eventually the colors disappeared and in their stead they set the letters *F* and *C* at the beginning of the lines. These letters, distorted by the poor penmanship of individuals, became

the signs:  or and which at the present time express the clefs of

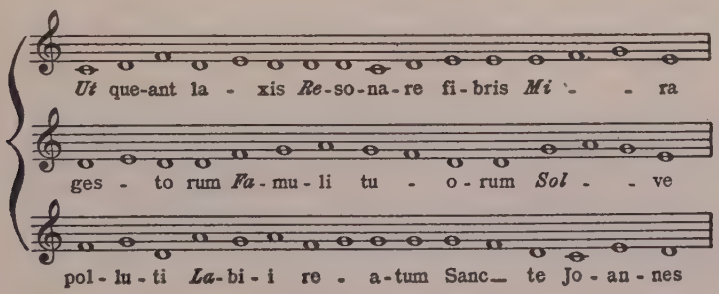
F Clefs C Clef

F (bass) and of *C;* these were the only ones used in the old manuscripts; the *G* clef (treble) was not created until several centuries later and did not come into general use before the 17th Century.

Gradually, a staff of four lines was adopted which was sufficient for writing the music of that time; even to-day, the Plain Chant is still written on four lines. It was only about the end of the 13th Century that a fifth line was added to satisfy the exigencies of secular music. But whatever progress was made remained local, nobody had enough authority to pass upon those new inventions and declare them laws; musicians were sorely in need of a guiding light to show them the way to a definite and general understanding.

By the latter part of the 10th Century, Providence sent that guiding light to the world in the person of a French monk belonging to the Monastery of St. Maur des Fosses. His name came down to posterity as Guido of Arrezzo which resulted in his being thought an Italian, until the discovery of an old manuscript in 1888, which proved him to have been a Frenchman. But whatever his nationality, Guido was a great genius and his name seems to symbolize the whole mediæval period. His occupation was to teach his fellow monks how to sing and in order to simplify his task and obtain results he invented a clever system which, according to his own statement found in letters which he wrote to another priest friend of his: "A pupil might learn in five months what formerly it would have taken him ten years." That system was *Solmisation*. In it he gave to the notes names which made them easy to remember and which at the same time, indicated the exact position they occupied on the staff of four lines which he had definitely adopted and in which he used systematically the lines as well as the spaces between them, the latter being an innovation. Those names were: ut, re, mi, fa, sol, la, and this is how he came to choose them.

Among the hymns sung in his monastery was one addressed to St. John (Sancte Ioannes) patron of musicians; it ran as thus:



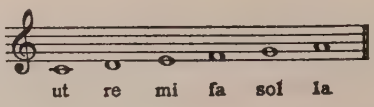
The modern notation is used in this case to facilitate the reading of the hymn in question. At the time there was no *G clef* adopted yet and the notes were square or diamond-shape like this: ◆

The Latin words of the hymn, when translated literally in English, are as follows:

In order that thy servants
May sing the wonders of thy deeds
With freely sounding strings,
Absolve, O St. John, the guilt of their polluted lips.

Guido of Arezzo noticed that the note connected with the first syllable of the word starting each verse was always one note higher than the one starting the preceding verse, thus forming, when separated from the rest, the first six notes of the scale of *C*. So he decided to give to each of these sounds the

name of the syllable with which it was connected, the result of it being the following six-note scale:



The seventh note existed but was little used and was purposely not named for a reason which will be explained in the chapter on Consonances and Dissonances, page 88, but in the beginning of the 17th Century a Belgian musician E. Puteamus, professor at the University of Louvain, named that seventh note and to conform himself to the same idea which had prompted the creation of the six others, he gave it the name of *si*, which is a combination of the first letters of *S*ancte *I*oannes.

During that same century the syllable *do* was substituted for *ut* because the latter is not very singable on account of the consonant *t* which terminates it. This innovation is supposed to be due to an Italian by the name of Buononcini in 1673; but in France, in our day, they still use the syllable *ut* to designate the *C* clef and also the tonality of *C;* for instance, they will refer to a composition as being written in the key of *Ut* instead of saying the key of *do* (C) although in solmisation they say *do.*

To come back to the debt that we owe Guido of Arezzo, it may appear a small feat to invent a simple mnemonic system and to decide upon the formal adoption of the staff, but, in formulating this absolute rule that "all the notes placed on the same line or in the same space must have the same name," he laid the corner-stone of our present musical notation; besides, his demonstrations were so clear and practical, his ability for organization so keen that he soon had spread his new ideas all over the religious world and from there, owing to its accessibility, music became the property of everyone.

Yet, although Guido named the notes and established definitely the close relation existing between their intonation and the place they occupy on the staff, thus giving them a personal identity, he did nothing for *rhythm* and the way to express it, for the good reason that there was no rhythm in those days. As one may notice in the Hymn to St. John, chants were monotonous successions of sounds written in no special time. But as years went by, composers began to feel that it was only through the variety of rhythm in combination with the sounds that they could express sentiments and stir emotions. Unfortunately, musical notation in that respect had not kept pace with the æsthetic development of the art, and therefore a chaotic period ensued lasting several centuries, during which every now and then a new system would appear, soon to be abandoned owing to its impracticability. To distinguish the different values of notes some were painted in bright colors as in old manuscripts where one may find notes painted in red, others in black or white and sometimes

they were half one color, half another, all of which combinations meant special time values. In other instances the written sign did not mean at all what it appeared to be; and an asterisk would refer the executant to a remark at the bottom of the page telling him to shorten or lengthen the note, mentally, by half, third or fourth of its value.

It is needless to say that there was no reading at sight in those days, and when a singer or instrumentalist interpreted a new composition, he had taken all the necessary time beforehand to master its intricacies.

Still, about the 12th Century, measured notation began to appear, although its use did not become general at once; some compositions showed the innovation of being systematically divided into a certain number of equal parts called *measures* and each measure in its turn was divided in a certain number of *beats* of equal value, but these measures were not separated from each other by bars which were made use of only five centuries later. At first, only triple time was used, it was called *Perfect Time* out of reverence for the Blessed Trinity and was applied exclusively to all Church music; a perfect circle (O) was taken as a sign to indicate it and that sign was put at the beginning of the composition like the time signature of our day.

Soon after, the development of secular music forced the adoption of *duple* time which they qualified as "imperfect." To distinguish it from the perfect time they cut the circle in two with a vertical line running through it (Ø) and when measures in four beats made their appearance they used the half circle alone without the line (C). This is the sign which at the present time indicates measures in $\frac{4}{4}$ and which most English speaking people call erroneously "common time" thinking that as long as that rhythm is somewhat more commonly used than any other and that the letter *C* is the first letter of the word "*common*" it has some relation to that expression, but this is altogether a mistake.

Music was becoming a little more elaborate too; variety was being brought in through the free use of flats and naturals; in fact they had been in use as far back as the 10th Century when notes were represented by letters but it was only in connection with the *b* which was lowered or kept natural according to a reason which will be explained in the chapter on *Dissonances*.

When the *b* was round (♭) it meant *b flat;* when it was square (♮) it meant *b natural.* Eventually they adopted these signs to express flats or naturals in connection with all the other notes, though changing somewhat the shape of the natural which became this (♮).

The sharp (♯) was invented about the end of the 16th Century by a Frenchman, Josquin des Prés. The double flat (♭♭) and double sharp (𝄪) are of a much more recent date, because, up to the time of Bach, composers had no need for them; their compositions being written mostly in C major, A minor or other simple tonalities. It was Bach who first made use of tonalities having many flats or sharps at the signature when he wrote his 48 Preludes

and Fugues for the "Well-Tempered Clavichord" which was the piano of that period.

The use of key signatures is also comparatively recent. For centuries it was customary to set each time the alteration in front of the note; but when composers began to write in more elaborate tonalities they had to adopt another system which would simplify their task. Still it was quite some time before they became accustomed to key signatures and were able to determine which alteration belonged to the tonality and which one was an accidental. It is said that Händel wrote the manuscript of his "Harmonious Blacksmith" which is in E major (4♯) with only three sharps at the signature; evidently he set a sharp in front of every *d*, but his music publishers corrected the error, because by that time the art of printing had been invented and music publishing houses were in existence.

The inventor of music-printing with movable types was an Italian by the name of Ottaviano de Petrucci, born in Fossombrone in 1466. He established his first publishing house in Venice in 1498, where he worked for twenty years after which he moved back to his birthplace where he died in 1523. His editions, printed with great care and remarkable neatness, are rare and highly-prized specimens of early presswork. His invention, adopted immediately in several countries, created a revolution in the musical world and proved a great boon to composers as well as to the general public; individual eccentricities had to give way to practical, sensible, uniform signs which came into existence almost immediately and from the start, musical notation began to look very much like the one used to-day. At first, while movable types were used, the notes were given the square and diamond shapes found in the manuscripts of the earlier periods (■◆). They were printed in white or black according to their value, other colors having been discarded already in the 14th Century, but when toward the end of the 17th Century they started to engrave music on tin sheets, notes were given the oval form which is in use in our day (𝅝). At about that time too, bars of measures came into existence which contributed considerably to simplify the reading of music and therefore favored its popularization.

MODERN NOTATION

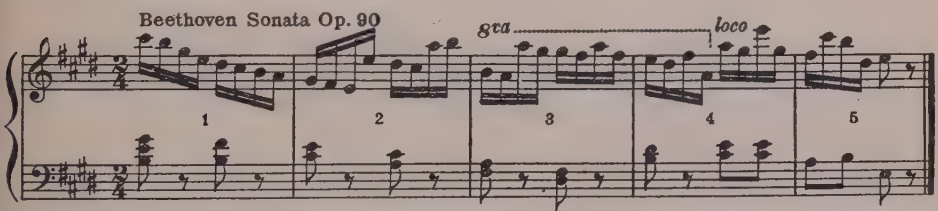
Staff

The five lines on which the notes are written constitute what is called the *staff;* the distance between those lines is called a *space.* Consequently, the staff is composed of five lines and of four spaces counted from down up; a note can be written also under the first and above the fifth line.

But five lines are not sufficient to write all the notes that the ear can perceive and which are employed in musical compositions; therefore, it has been agreed to use short, supplementary lines above and below the staff; they are

called *ledger lines* and their number is limited only by common sense because the eye has difficulty in grasping quickly a number of lines greater than four.

There is another way of extending the staff in order to write the very high or the very low notes used by certain instruments; they employ the Italian expression: "*All ottava*" usually written in its abbreviated way: 8^{va} meaning "at eight notes or an octave distance." When put above the staff it means that the note or notes must be played one octave *higher* than where they are actually written; when the 8^{va} is below the staff, it means that the note or notes should be played one octave *lower* than where they are actually written. A dotted line always follows the sign 8^{va}....., its meaning being that all the notes under it or above it follow the rule of the 8^{va} until that line stops. When that line comes to an end, they sometimes write the word *loco* which in Italian means "place"; it signifies that the note immediately under the word "loco" resumes its own place. At other times, they just end the horizontal dotted line with a very short vertical dotted line like this ⋮ or ⋮ and the note directly under or above the vertical dotted line is the last to be played at an octave distance. In Measure 3 of the following example the *b*, on which the 8^{va}..... begins, has to be played one octave higher, consequently on the same key as the *b* which terminates Measure 2, and all the other notes under the dotted line follow the same rule. In Measure 4, the *a*, on which the 8^{va}..... stops, is played on the same key as the *a* which follows immediately and on which the word "loco" is written meaning that the second *a* keeps its own place.



The 8^{va}..... is seldom found under the bass in piano music except when the latter has to be played in octaves and too many ledger-lines would have to be used in order to write both notes. Generally only the upper note is written and under it is "con 8^{va}," which in Italian means "with octave."

Occasionally one will come across the sign 15^{ma}, an abbreviation of the Italian word "Quindecima" which means at the distance of a fifteenth or two octaves. Such a sign enables composers to write with a reasonable amount of ledger-lines the very low notes of the keyboard used especially in organ music.

An illustration of it can be found on page 43 in the example entitled: "Names of the Octaves in absolute pitch."

The *c* which begins the succession of scales is the one which lies four octaves below what is generally called: "middle c."

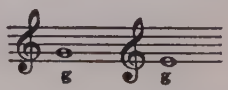
The first five notes *c*, *d*, *e*, *f*, *g*, are not included in an ordinary piano keyboard; to write those would mean the use of many ledger-lines, the *c* requiring nine of them, therefore, to facilitate the reading, a $15^{ma.}$ sign is set under the *c* which is at a distance of two octaves below "middle *c*" and which in F clef (bass) requires only two ledger-lines under the staff. The 15^{ma} brings the *c* in question two octaves further down and the notes which follow abide by the same rule until the *b* where the dotted line comes to an end. The *c* that starts the next scale is the one which lies three octaves below "middle c"; the same process as before is used but this time it is an 8^{va} sign which is employed, bringing the notes only one octave further down than those written. All the following scales are played as they are written except the last two of the series *above* which an 8^{va} and a 15^{ma} signs are set; consequently the very last scale is played two octaves higher and the one before, one octave higher than where they are written. The *c* which terminates the series is at a distance of four octaves above "middle c."

CLEFS

Clefs are signs which are put at the beginning of the staff to determine the names of the notes. The rôle of each clef is to give its own name to the note which is written on the same line as it occupies itself, all the other notes being named accordingly.

There are three clefs: the *G clef:* 𝄞: the *F clef:* 𝄢; and the *C clef:* 𝄡.

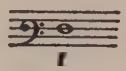
The *G clef* is written on the second line that is, its curve crosses the second line, just touching the first and the third; it is that curve which determines the line on which the clef is actually written and one has to be accurate in making it because there used to be a G clef on the first line in which case the curve crossed the first line; that clef, however, is not used any more:



The G clef on the second line gives its own name of *g* to the note written on the second line, therefore the note written in the first space is called *f*, the one written on the first line is *e*, etc. The *G clef* is used in our day for the music written for high voices, for all instruments producing high notes and also for the upper part of the piano, organ and harp generally played with the right hand.

In America the *G clef* on the second line is often called *treble clef;* it derives that name from the fact that the music for female and boy sopranos, called *treble voices*, is written in that clef, but it is more accurate to use the expression "G clef."

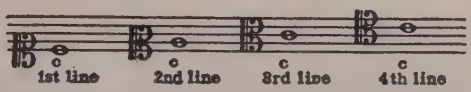
The *F clef* gives its own name of *f* to all the notes written on the line on which it is placed itself and the sign which indicates it is this: .

In this case the curve crosses two lines, the third and the fourth; to determine which of the two is meant, the fourth line is encased between two little dots, one above, one below; those dots are absolutely necessary because there is also an *F clef* on the third line in which case it is the 3rd line which runs through the two dots and all the notes written on it are called "f," the other notes being named accordingly  This clef is not used at all in America, but in France it is used for transposing at sight.

The *F clef* on the 4th line is generally called *Bass Clef* because it is used mostly for the music written for bass voices and low-toned instruments like the double bass, the 'cello, also for the part played with the left hand on the piano, organ, harp, etc.

The *C clef* gives its own name of *c* to the note written on the same line that it occupies itself, the other notes being named accordingly.

There are four C clefs: on the 1st, 2nd, 3rd and 4th lines, the line which is meant runs through the two brackets as seen in the following example:

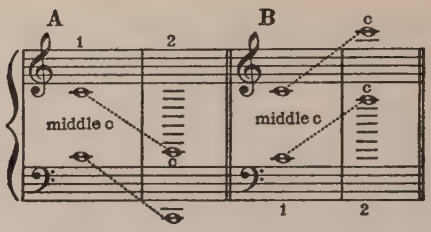


These clefs are not used any more for the voices but formerly in vocal quartets, the soprano-part was written in *C clef 1st line*, the alto's in *C clef 3rd line*, the tenor's in *C clef 4th line* and the bass in *F clef 4th line.*

At the present time, there are instruments which are yet using some C clefs; for instance, the music for viola and alto-trombone is written altogether in C clef 3rd line, except the very high notes which are written in G clef; some high notes of the bassoon, 'cello and tenor-trombone are written in C clef 4th line.

In some American editions of vocal quartets a C clef sign: is set in the third space at the beginning of each staff of the part sung by the tenor and is referred to as "Tenor clef" although the notes are actually written in *G clef* (treble clef). In this case the *C clef* is used as a mere warning sign to enable the tenor to find his part quickly and not mistake the alto's for his own, the real tenor clef being the *C clef 4th line.*

It is owing to those different clefs that all the musical sounds can be written on one staff with only a reasonable amount of ledger-lines. One can realize this fact in comparing, for instance, notes written in G clef with notes written in F clef.



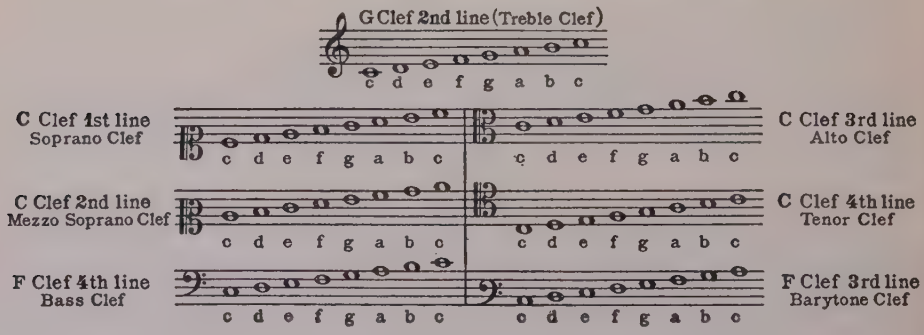
In the first measure of Example A, it shows the middle *c* in the G clef which already requires one ledger-line *below* the staff and underneath, the same *c* in F clef which requires one line *above* the staff. Now suppose that we want to write in G clef, the *c* which is two octaves below the *middle c*. In order to do so we would have to use eight ledger-lines below the staff, a number which the eye cannot grasp at first glance; while if that same *c* is written in F clef, it would require only two of them as illustrated in Measure 2 of the same example. In Measure 2 of Ex. B, we have the *c* which lies two octaves above the middle *c;* in G clef it requires only two ledger-lines above the staff, while if the same note was written in F clef it would require eight of them.

Beside facilitating the musical notation, the different clefs are used in Europe for the transposition at sight.

To explain this statement would require a chapter by itself which would appeal only to very advanced students intending to follow a musical career.

If that stage is ever reached by anyone reading this book he would have to study under a special European teacher, as the use of the clefs is not taught by American teachers.

Scale of C written in the seven different Clefs



FIGURES OF NOTES

As mentioned previously, notes, according to the place they occupy on the staff express sounds, and, according to their shape, they represent relative time values.

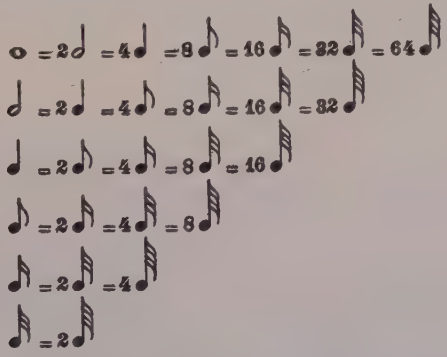
There are seven figures of notes:

The whole-note . . . . .
The half-note . . . . .
The quarter-note . . . . .
The eighth-note . . . . .
The sixteenth-note . . . . .
The thirty-second-note . . . . .
The sixty-fourth-note . . . . .

There is another note called "breve" ( ) which is equal to two whole notes; it is very seldom used in modern music, but is often found in the Gregorian Chants of the Catholic Church and also in old editions of Protestant Hymn Books.

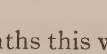
The figures of notes being arranged in the above order, one may notice that the whole note, heads the series and is of the longest duration; it is equivalent to two half-notes, therefore the half-note is equal to one-half of the whole note; the half-note being equivalent to two quarter-notes, one quarter-note is equal to one-half of the half-note and so forth. It will be so right through the series, each note being equal to half of the preceding and to two of the value that follows, just like fractions in arithmetic.

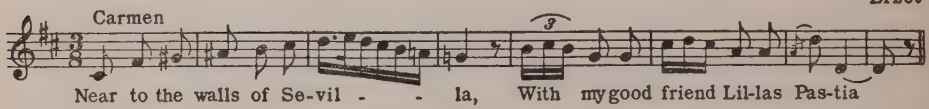
In the chapter on "Time" page 31 the seven values just mentioned will be referred to as "*simple notes*" for the very fact that, nothing being added to them, they are normally *divisible* by *two*. When dotted, notes will be referred to as "*compound notes*" and in that state are normally *divisible* by *three*.



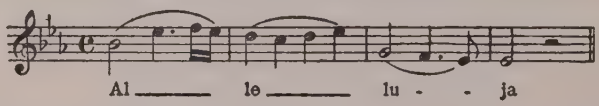
One may notice that from the eighth-note down, it is the number of hooks or flags that determines the value of the note, the eighth having one; the sixteenth, two; the thirty-second, three, and the sixty-fourth, four.

In instrumental music, when in a measure there are several hooked notes which belong to the same phrase, though not always to the same beat, they are

generally joined together with one, two, three or four thick lines or strokes, the number of lines being equivalent to the number of hooks that the notes would require if they were written singly. For instance, instead of writing four eighths this way:  they will join them together thus: instead of six sixteenths written individually, they will join them together this way: In vocal music it is different; notes are joined together only when they are sung to one syllable, but when each has a different syllable they are written separately as shown in the following example:



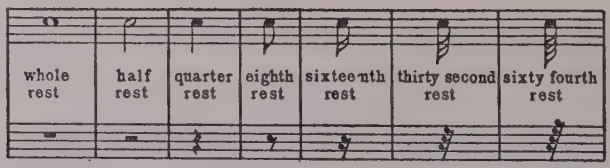
Still, there are times when the values do not allow of their being joined together, as for instance a succession of quarter-notes or half-notes. In those cases a curved line called *slur* is put above or under the group of notes to indicate that they all have to be sung on one syllable as illustrated below.



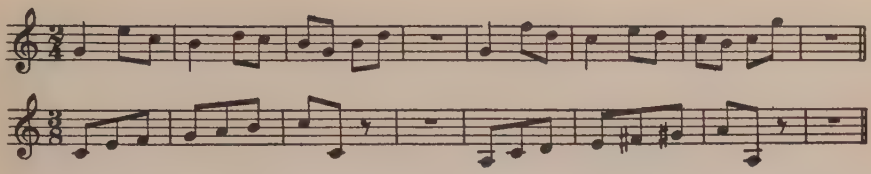
RESTS

Rests are signs which indicate an interruption of the sound; they are to music what punctuation is to a language, being a means of bringing out the different phrases or part of phrases with precision and clearness.

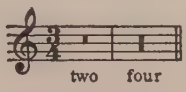
Each value of note has a figure of rest corresponding to it, consequently, as long as there are seven values of notes, there are seven figures of rests which are as follows:



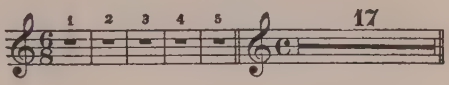
Rests follow the same rule as notes do, each one being equal to half of the preceding and the double of the one that follows. In a composition, rests must always have the same value in the measure as the notes which they represent. The only rest which is not always taken for its own value is the whole rest; at times, it is used as a mere indication of an empty measure, no matter in what time the piece is written.



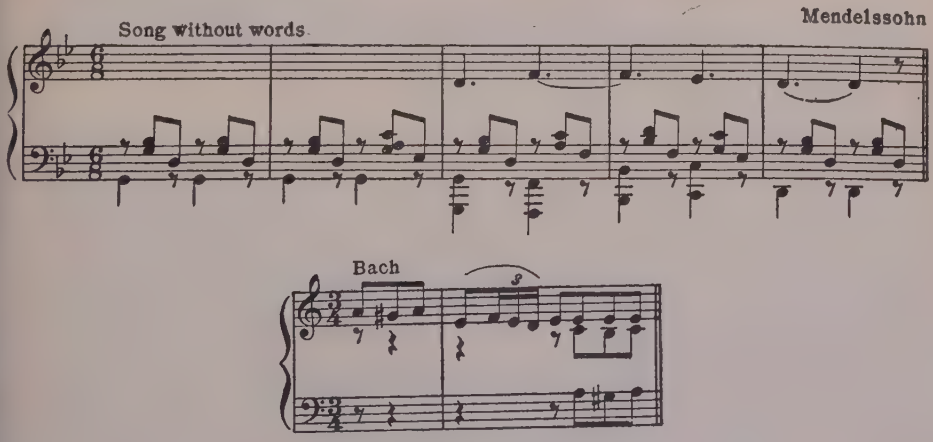
In old editions, the following signs represented two or four measures in whatever time the piece was written.



In ensemble compositions, when one of the voices or instruments has a few empty measures while the others go on, a whole rest is put in each measure and above each is a number as seen below, but if there are many of them, generally a bar is set across the staff and above it the number of measures to be counted.



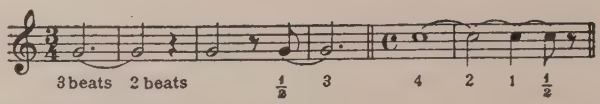
It is customary to write the whole-rest under the fourth line and the half-rest sitting on the third line while the other rests are usually written across the third line, but in music for instruments with a keyboard like the piano, organ, etc., when several parts are at times written on one staff and one part should remain silent, the rest is put on the same level as the part in question even if it is outside the five lines.



TIES

A tie is a small curved line (⁀ or ‿) put above or under two notes of the same name and of the same pitch to indicate that the second note should not

be sounded, its value being added to the first. More than two notes can be tied together in which case, the value of everyone from the second note on is added to the first.



REMARK—One should not mistake the tie with another small curved line having the same shape (⁀ or ‿) and which is called *slur*. The latter is an interpretation sign which is set at times above or under two notes of a *different name* to indicate that they are to be given a special emphasis in the phrase, the first of the two notes in question being generally slightly accented as will be seen in the chapter on accentuation.

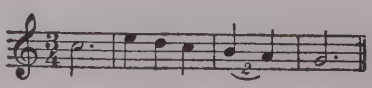
DOTTED NOTES

When a dot is added to a simple note, it prolongs it by half of its value, like a mother tied to one of her two children; instead of writing out the two notes and tie them, a dot is used to simplify matters.

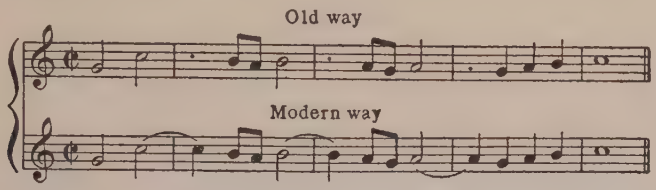
Dotted notes are *compound notes* because the value of the dot being added to the original simple note turns it into a compound object.

Dotted notes are normally divisible by three, the result being three simple notes of the value immediately below.

A half-note is equal to two quarters but when dotted it is worth one more quarter which altogether makes three: 𝅗𝅥 = ♩♩; 𝅗𝅥. = ♩♩♩. A quarter-note is equal to two eighths; when dotted it is worth three of them: ♩ = ♪♪; ♩. = ♪♪♪ But when only *two simple notes* are put in the place of a *dotted note* (which by right is equal to *three* simple notes) it is an exception; such a division is called a "*couplet*" and a *2* has to be set above or under the group as a warning sign. Couplets are found especially in compound measures and occasionally in simple measures in three beats where, owing to the musical pattern, only two notes are required. Therefore: ♩. is normally equal to ♪♪♪ and abnormally to a couplet of eighths ♪2♪. ♩. is normally equal to ♩ ♩ ♩ and abnormally to a couplet of quarters ♩2♩.

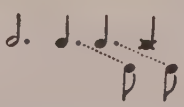


In modern editions, the full value of the dotted note is always comprised within one measure, but in very old editions, occasionally one comes across the note being in one measure and the dot being in the next measure; at the present time, when such a case presents itself, the two notes are always written out and tied; both ways are illustrated below.



Dotted notes can also be *normally* divided in *two equal parts*, the result being *two dotted notes* (compound notes) of the value immediately below.

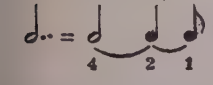
The explanation of this fact is as follows, taking as an example a *dotted half-note* which is equivalent to *three simple* quarter-notes (𝅗𝅥. = ♩ ♩ ♩).

The half-note by itself is equal to two quarters, the dot representing the third quarter or two eighths; in dotting the first two quarters, we add to each the value of one of those eighths. Ex.:

The same principle applies to all dotted notes and will be found of great importance in the study of compound time.

Therefore: 𝅝. = 𝅗𝅥. 𝅗𝅥. or ♩. ♩. ♩. ♩.
𝅗𝅥. = ♩. ♩. or ♪ ♪ ♪ ♪ etc.

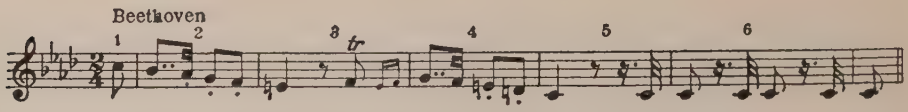
On the other hand: ♩. ♩. ♩. ♩. = 𝅗𝅥. 𝅗𝅥. or 𝅝.
♪ ♪ ♪ ♪ = ♩. ♩. or 𝅗𝅥. etc.

Two dots can be placed after a note in which case the second dot is equivalent to half of the first dot and consequently the fourth of the original note



or seven eighths. A double dotted note is always equal to seven *fourths of itself.*

𝅝.. equals 7 quarters which are the fourths of a 𝅝
𝅗𝅥.. equals 7 eighths which are the fourths of a 𝅗𝅥
♩.. equals 7 sixteenths which are the fourths of a ♩
♪.. equals 7 thirty-seconds which are the fourths of a ♪



The above example is in $\frac{2}{4}$ time, meaning a measure in two beats, each beat being equivalent to a quarter-note:

The which is found in measure 2 and also in measure 4 is equal, according to the rule, to seven fourths of itself, therefore seven thirty-seconds

consequently, as long as each beat is equivalent to eight thirty-seconds, the a♭ of measure 2 and the *f* of measure 4 (both thirty-seconds), will be played respectively on the last eighth-part of the beat thus completing it.

Rests can be dotted just as well as notes and follow the same rule, the dot being equal to half the value of the rest. Dotted half-rests, dotted quarter-rests and dotted eighth-rests are used quite frequently in American editions but rarely so in French editions.

The dotted whole-rest	is equal to three half-rests	
The dotted half-rest	is equal to three quarter-rests	
The dotted quarter-rest	is equal to three eighth-rests	
The dotted eighth-rest	is equal to three sixteenth-rests	
The dotted sixteenth-rest	is equal to three thirty-second rests	

The above excerpt from a Beethoven Sonata which illustrates double dotted eighth-notes contains also dotted sixteenth-rests, each being equivalent to three thirty-second-rests.

Dotted rests, like dotted notes, can be divided in *two* equal parts, the result being *two dotted rests* of the value immediately below or four dotted rests of the value next to those in the regular sequence.

The dotted whole-rest is equal to two dotted half-rests or four dotted quarter-rests

The dotted half-rest is equal to two dotted quarter-rests or four dotted eighth-rests

The dotted quarter-rest is equal to two dotted eighth-rests or four dotted sixteenth-rests and so forth. Double dotted rests

are seldom used, in case they should be, they follow the same rule as the double dotted notes.

TRIPLETS

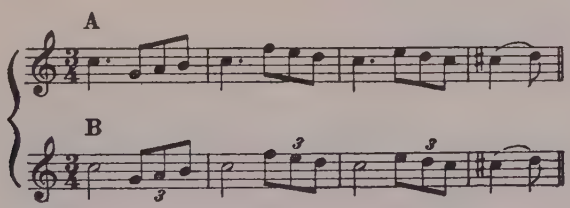
A triplet is the abnormal division of a simple note into three equal parts, the three notes obtained therefrom being given in the measure the same amount of time as would be allotted to the two notes of the normal binary division, but to show that it is a triplet, a 3 has to be set above or under the group as a warning sign. Ex: A half-note is normally worth two quarters, but at times can also be equal to three quarters in triplet or to one triplet of quarters if the group of three notes is taken as a unit or a set.

A quarter-note is normally equal to two eighths, but can also be equal to three eighths in triplet or to one triplet of eighths, etc.

When the triplet is composed of half-notes or quarter-notes, a slur is set above or below the head of the notes to show that they belong together, the 3 being placed inside the slur like this:

In instrumental music, when triplets are of eighths, sixteenths, thirty-seconds or sixty-fourths, the notes are generally joined together making thus the slur unnecessary, the 3 being set above or under like this:

If the 3 is not there, the notes in question, although joined together, *are not* a triplet as illustrated below.



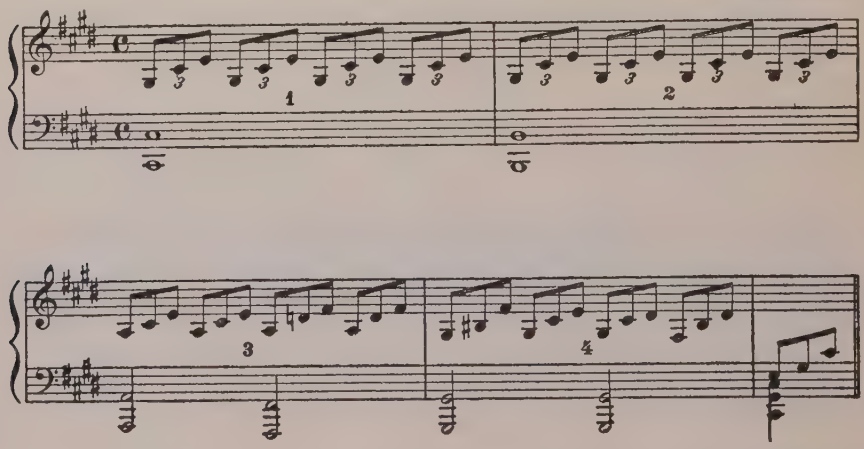
In Ex. A, the groups of eighths *are not triplets* because the No. 3 does not appear; in each case, the last two eighths of the group fill the third beat and the first eighth belongs to the preceding beat in which it occupies the second half, the first half being covered by the dot which is equal to an eighth, and the quarter-note filling the first beat.

In Ex. B, the groups of eighths *are triplets* because they are accompanied by 3; each triplet is equivalent to a quarter-note and fills the third beat of its respective measure.

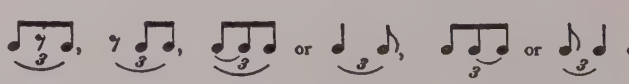
Occasionally, one may come across an exception to the rule in relation to the No. 3. For instance, when several measures, all containing triplets, follow each other, editors will set a 3 above or under each triplet for a couple of measures and then drop it, taking for granted that the interpreter will understand that all the other groups of three notes are triplets.

A striking example of it is found in the first movement of Beethoven's Moonlight Sonata, Op. 27. In this case, the license is excusable because the use of triplets is continuous, but where there is a triplet here and there, the rule about No. 3 should be strictly adhered to.

Beethoven



All the notes forming a triplet do not necessarily need to be present; sometimes rests are introduced, or two notes are tied and the value equal to them is written instead like this:



In vocal music, the three notes of a triplet are not always joined together; when each note is connected with a different word or syllable, the notes are written separately, a slur covering the group and a 3 set inside, but if within a group, there are two of the notes to which only one syllable is given, those notes are joined together, the third one being written individually as seen in the following example taken from Verdi's Aïda.

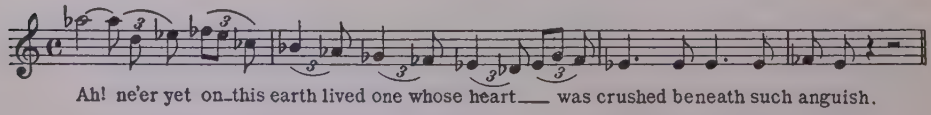
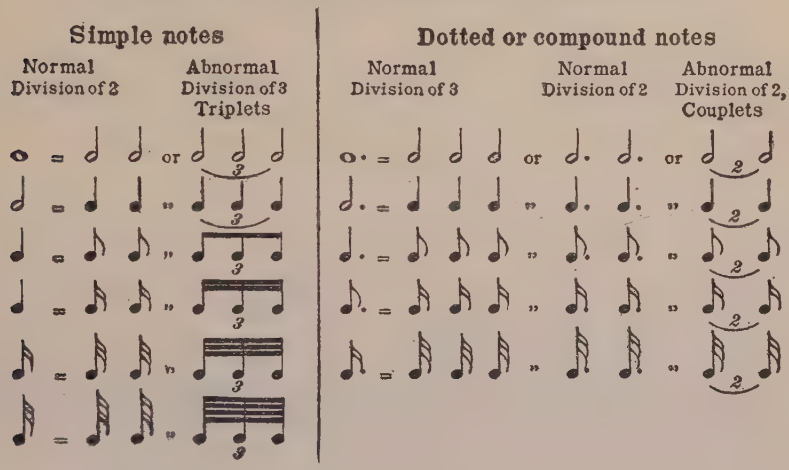


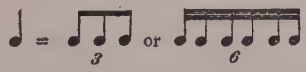
Chart of the Normal and Abnormal Divisions of Simple and Dotted Notes as Compared to Each Other



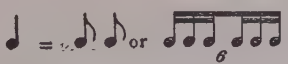
SEXTUPLETS AND DOUBLE TRIPLETS

At times, one of the notes of a triplet is divided equally in two or even in three, or a dotted note is introduced; yet, the group remains a triplet just the same and a *3* is set above or under it.

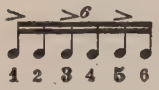
But when each note of the triplet is divided in two, it forms a group of six notes of equal value to which some theorists (especially in America) give the name of *Sextuplet;* it has to be executed in the same amount of time as would be allotted to the triplet from which it derives, the latter being usually equal to *one beat.*

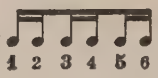


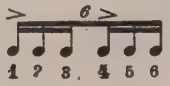
Another group of six notes, very much employed, is called by some theorists the *Double-Triplet* under or above which the number 6 is also set.



Although both groups are equivalent to the same value of note (in this case a ♩) they differ altogether by their accentuation. The *Sextuplet* is the *ternary* division of the quarter-note and is composed of three little groups of two sixteenths, the first note of each group being slightly accented like this:



or 

, while the *Double Triplet* is the *binary* division of the quarter-note and is composed of *two* triplets of sixteenths, each one equivalent to one eighth and to preserve that binary division, the first note of each triplet is slightly accented like this: 

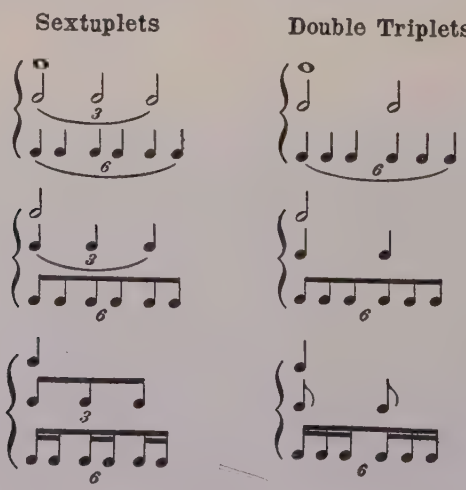
.

Yet, there seems to be quite a difference of opinion among musicians in reference to the two groups in question. In Europe, it is generally agreed that a *Sextuplet* (*Sextolet*) is, what in America is a *Double Triplet*, and what is called here a Sextuplet, is there a *Subdivided Triplet*.

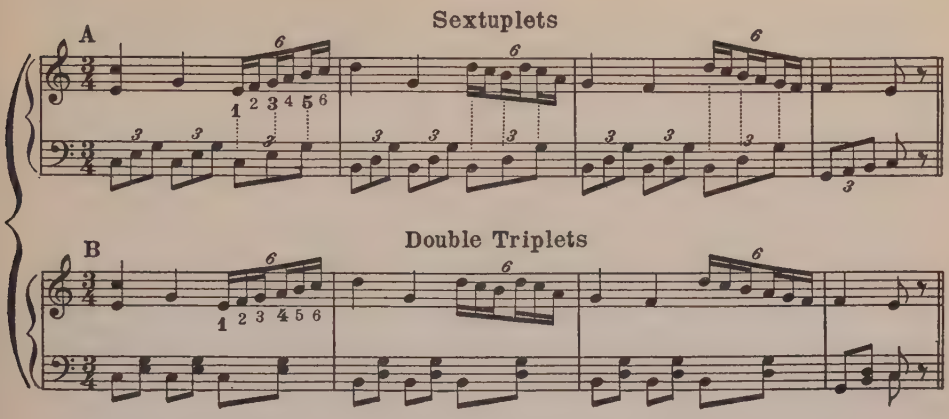
It really would not make any difference what those groups are called, provided editors would indicate more clearly how they are to be executed, as long as they differ so much in their accentuation.

The proper way to write them is shown in the examples accompanying this chapter. In some editions it is done correctly, but unfortunately, it is not always so; in many cases a *6* is set above or under either of those groups this way:

, leaving the choice to the executant and the result is often very perplexing.

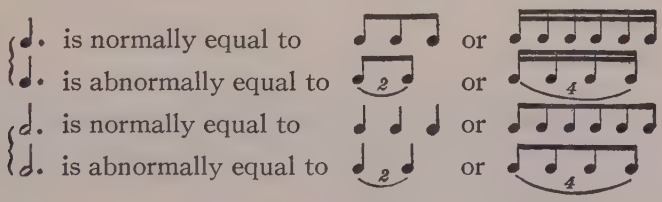


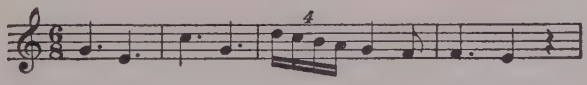
In order to realize the marked rhythmic difference existing between Sextuplets and Double Triplets, the student is advised to play several times in succession the two following examples thus becoming familiar with the individual accentuation belonging to each.



QUADRUPLETS AND OTHER ODD DIVISIONS

A *quadruplet* is the *binary division* of each note of a *couplet* which, itself, is the *abnormal binary* division of a *dotted note* into two simple notes. The number 4 is always set above or under the group as a warning sign.



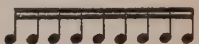
Consequently one may define a quadruplet as being an abnormal group of *four notes* to be executed evenly in the time allotted to a group of *six notes* of the same kind, the latter being the normal division. Quadruplets are generally found only in compound measures.

Irregular groups of 5, 6, 7, 9, 10, 11, 13, 14, 15, notes, etc., are used also occasionally.

Groups of *5* and *7* are to be executed evenly in the same time allotted to a group of *4 notes* of the same kind, these being the normal division of a simple note.

Groups of *7* usually are found in compound measures where they are equal to the *six subdivisions* (grandchildren) of the dotted note equivalent to the whole beat, still, occasionally, they are found also in simple measures.

Ex: ♩ is normally equal to or, abnormally, to or .

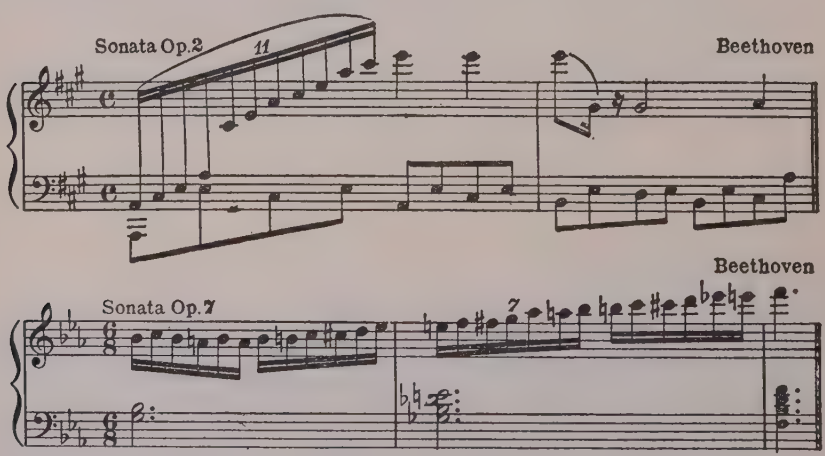
Ex: ♩. is normally equal to or, abnormally to .

Ex: 𝅗𝅥 is normally equal to or abnormally to 

When groups of 9, 10, 11, 12, 14 or 15 notes are met, they have to be executed in the same time allotted to a group of *8 notes* of the same kind, the latter being the normal division (great-grandchildren) of a simple note.

etc.

♩ is normally equal to or abnormally to etc.

It is understood that the number of notes contained in each irregular group should be set above or under it.

ALTERATIONS

An alteration is a sign which modifies the sound of the note in front of which it is placed.

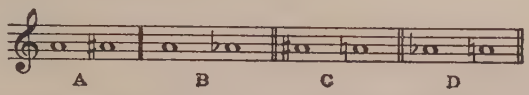
There are three alterations:

The *sharp* (♯) which raises the sound by a chromatic half-step.

The *flat* (♭) which lowers the sound by a chromatic half-step.

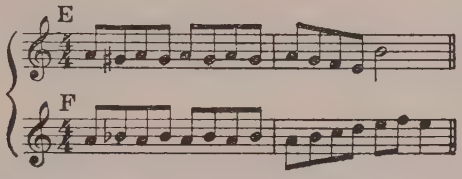
The *natural* (♮) which destroys the effect of the sharp or of the flat and restores the note to its natural state; consequently, when the note was sharped

the natural (♮) lowers it by a chromatic half-step; when the note was flatted, the natural raises it by a chromatic half-step.



In Example A the sharp raises the *a* by a chromatic half-step; in Example B the flat lowers the *a* by a chromatic half-step; in Example C the natural lowers the *a*♯ by a chromatic half-step and in Example D the natural raises the *a*♭ by a chromatic half-step.

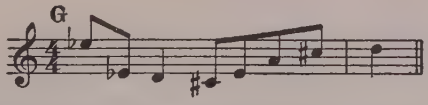
The effect of an alteration lasts for the balance of the measure in which it appears and all the notes bearing the name of the note which was first altered are subject to the same modification without one having to renew the chromatic sign, but the effect of the said alteration does not extend beyond that measure.



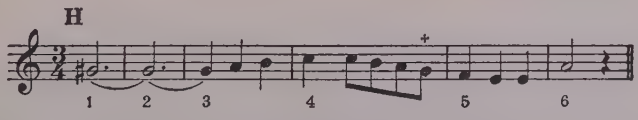
In Example E all the *g's* contained in the first measure are sharp, but the *g* of the second measure is natural.

In Example F all the *b's* contained in the first measure are flatted, but the *b*, belonging to the second measure, is natural.

Yet, it is customary to repeat the chromatic sign, within the same measure when the second note that it modifies appears in a different octave from the one in which it appeared the first time.

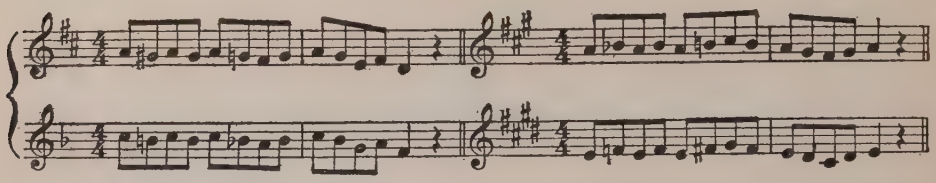


There is one case though in which the effect of an accidental alteration lasts for more than just one measure; it is when the altered note is tied to another note of the same name and of the same pitch belonging to the *next measure* or *measures* as in the following example in which the g's of measures 2 and 3 remain sharp because they are tied to the first, but the *g* of measure 4 is natural.



When a measure contains several notes of the same name, some being altered and the others having to resume their normal diatonic state, a natural

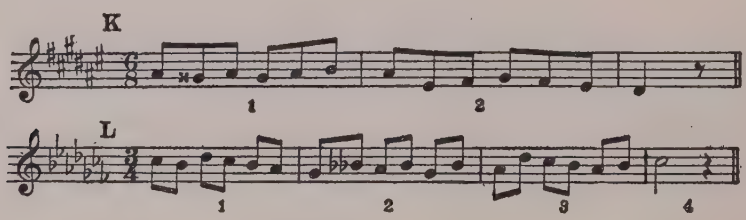
a sharp or a flat (according to the signature) has to be used and its effect lasts for the balance of the measure.



When a note is already sharped either at the signature or chromatically so for the time being and it has to be raised still more, a double sharp is used 𝄪.

Also when a note already flatted has to be lowered still more, a double flat (𝄫) is used.

The double sharp and double flat follow the same rule as the single sharp and single flat, their effect lasting only during the measure in which they appear as seen below.

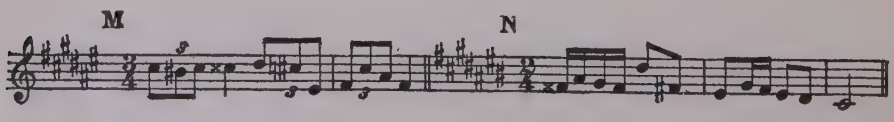


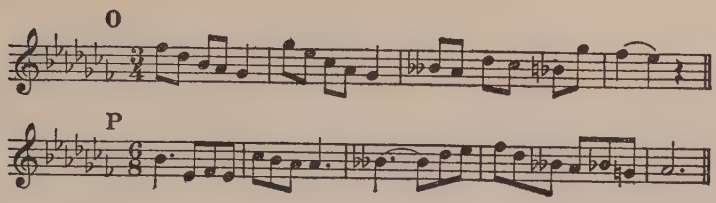
In Measure 1 of example K, the *g* following the g 𝄪 is double sharped also because it is in the same measure, but the g of measure 2 is single sharped.

In measure 2 of example L, the two *b's* following the *b*𝄫 are double flatted too, but in measure 3, the b's are single flatted.

When two notes of the same name appear together in one measure, the first being double sharped and the second having to resume its previous state of single sharp, a natural and a sharp are generally put in front of the note in question like this: (♮♯), the natural (♮) destroying entirely the effect of the double sharp, and making of the note a natural note, then sharping it again with the sharp sign (♯) as seen in the first of the following examples.

At times, the natural (♮) is omitted and only the sharp (♯) is used as seen in the second example.



The same rule applies to the double flat (𝄫).

REMARK: There is no such a thing as a double natural because one natural (♮) is sufficient to restore a note to its natural state whether it was single or double flatted, single or double sharped.

PART II

RHYTHM AND TIME

Introduction

Music is composed of two elements: Sounds and Rhythm, and still, it is only when closely combined with Rhythm that sounds can be called music according to our present standard. One begins to realize the truth of this statement only when starting to hum a favorite composition one note after the other regardless of time values. It will not be long before one would marvel at the lack of meaning of that formless aggregation of sounds which seems like a parody of the once beloved melody. It goes to show how much sounds depend on rhythm to express a musical thought.

On the other hand, rhythmic combinations rendered independently from sounds appeal most strongly to our emotions; one cannot deny the exhilarating sensation produced by the different taps of a drum or the clicks of castanets, one could almost call it "soundless music." Does this not show again the supremacy of rhythm over sounds?

Consequently, rhythm is to music what the steel structure, taken as a whole, is to a building; it upholds it and gives it its shape; without it, the building would soon collapse.

But in order to obtain the perfect structure, the builder has to be most careful about the detail work, that is, the putting together of all the beams, the rivets and numerous minor parts; to see that they all fit perfectly in their place and made strong and secure, or else it would jeopardize the solidity and consequently the safety of the whole building.

In Rhythm, the detail work is *TIME*. Time gives to each note its proper place in the measure according to the fraction put at the beginning of the composition and which indicates the number of beats and the value of each beat; it is actually a matter of arithmetic, and has to be studied systematically like any other science.

Unfortunately, that science is generally very much neglected by the American student; he seems to think that the rendering of the æsthetic part of music is sufficient to carry him through; but how mistaken he is! and how bitter is his disappointment when owing to the lack of proper knowledge of that most important side of his art, he fails to electrify his audience and therefore does not reach the goal which he had set for himself.

Consequently, the writer cannot impress strongly enough on the mind of the student the necessity of making a special study of Rhythm in which lies so great a part of his success. He should not to be satisfied only with *understanding it* but should keep at it until it becomes part of himself so, that in merely

glancing at a rhythmic combination, he would execute it accurately on the very instant giving it also that "swing" which is bound to captivate his listeners. Besides, the discipline imposed on the brain by the study of Time and Rhythm will greatly develop in the student the power of concentration so necessary to the pursuit of any profession.

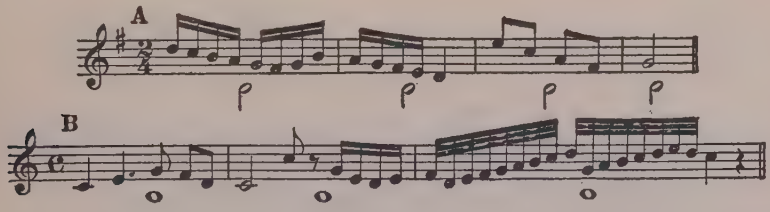
TIME

In order to obtain *Time*, a piece of music is divided into equal parts called *measures;* these measures are separated from each other by a small vertical line called a *bar*.

REMARK: One should avoid making the mistake of calling a measure "a bar"; a *bar* is only the line of separation, while a measure is the space between two bars.

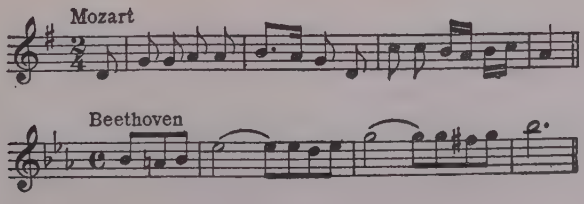
Measures are in their turn subdivided into two, three or four parts of equal value and duration called *beats*.

The value of all the notes and rests contained in each measure of a composition must be alike right through, notwithstanding the number of notes and rests there are in each measure.



In Ex. A all the measures are equal to a half-note although the formation of each measure is different; one measure contains 8 notes, another 5, another 4, another only one; in Ex. B all the measures are equal to a whole note, although each measure is formed differently; one measure contains 5 notes, another 6, another 7, etc.

Still there is one exception to that rule; when the first measure of a composition starts with rests, it is customary to omit writing them and to begin directly with the notes as in the following two examples where the first measures are incomplete and their apparent value does not equal the other measures of the composition.



In such cases, to know exactly when to start, the executant should count backward and realize whether, according to the time signature, the last beat is filled or partly so, then the one next to the last, etc., and begin accordingly. In the first of the preceding examples the time is in $\frac{2}{4}$, meaning a measure in two beats, each beat being equal to a quarter-note. The first measure contains only an eighth which occupies the second half of the second beat, the notes or rests filling the first part of the measure are missing, consequently the musical phrase begins on the second half of the second beat.

The second example is in $\frac{4}{4}$ time which means four beats and each beat being equal to a quarter-note. The first measure contains only a group of three eighths of which the last two occupy the fourth beat; the first eighth of the group belongs to the second half of the third beat, therefore the composition begins on the half of the third beat.

The time in which a piece of music is written is in accordance with the number of beats contained in its measures and the value of those beats. These two facts are indicated by a fraction which is put at the beginning of the first staff and is called the *time-signature;* it refers to the whole note which has been taken as unit of value is general.

The whole note is represented by 1; being the unit.
The half-note is represented by 2; because it is the half of the whole note.
The quarter-note is represented by 4; because it is the fourth of the whole note.
The eighth-note is represented by 8; because it is the eighth of the whole note.
The sixteenth-note is represented by 16; because it is the sixteenth of the whole note.
The thirty-second-note is represented by 32; because it is the thirty-second of the whole note.

Those numbers are used as denominators.

Therefore time-signatures always express fractional parts of the whole note; for instance:

$\frac{3}{2}$ means three halves of the whole note:

$\frac{4}{4}$ " four fourths " " " " ;

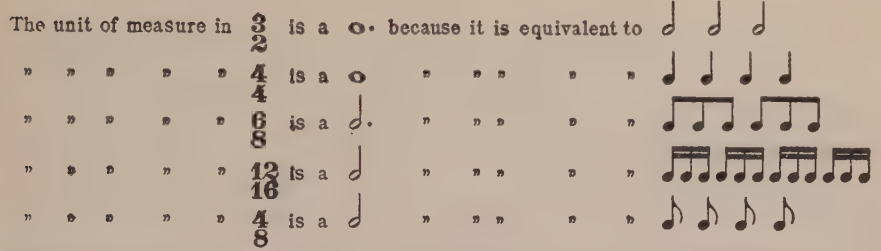
$\frac{6}{8}$ " six eighths " " " " ;

$\frac{12}{16}$ " twelve sixteenths " " " " :

$\frac{4}{8}$ " four eighths " " " " : etc.

The value of note equivalent to the whole fraction is called the *unit of measure.*

For instance, taking the preceding analysis, we find that:



The value of note equivalent to *each beat* is called *unit of beat.* When the *unit of beat* is a *simple note* like a 𝅝, 𝅗𝅥, ♩, ♪ (normally divisible by two), the *TIME is called SIMPLE.* When the *unit* of *beat* is a *dotted note* (compound note) like 𝅗𝅥., ♩. (normally divisible by three), the *TIME is called COMPOUND.*

Consequently there are two kinds of time: *Simple* and *Compound* and it is the *unit of beat* which determines their qualification.

SIMPLE TIME

In simple time, the *Numerator* indicates the *number* of *beats;* it is either *2, 3* or *4.*

The *Denominator* indicates the value of note which is the *unit* of *beat;* it can be either:

1 which represents a whole note (𝅝)
2 which represents a half-note (𝅗𝅥)
4 which represents a quarter-note (♩)
8 which represents an eighth-note (♪)

The *whole fraction* indicates the value of each measure; and the value of note equal to the whole fraction is the *unit of measure* as mentioned before.

Now let us analyze a $\frac{3}{4}$ time signature.

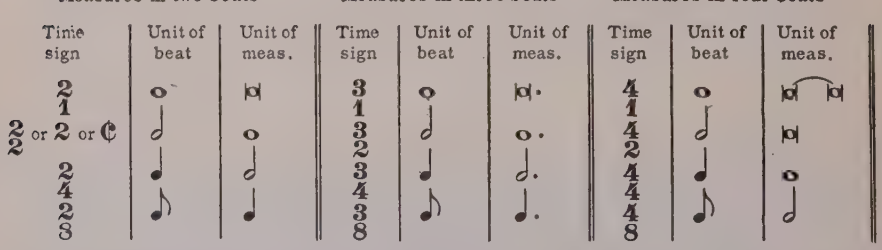
Numerator 3 tells us that it is a measure in *three beats*, and also that it is a simple measure because it is only a simple measure which can have *3* as Numerator; *Denominator 4* tells us that the unit of beat is a *quarter-note* which is a simple note, normally divisible by two (♫) and it is this fact which renders that measure simple. The whole fraction $\frac{3}{4}$ tells us that each measure, regardless of the number of notes or rests it contains, must be equal to the three-fourths of a whole note, or three quarter-notes. (♩ ♩ ♩) The note equivalent to those three quarter-notes is the unit of measure; it is a 𝅗𝅥.

Let us take the time-signature $\frac{2}{2}$ written sometimes 2 or 𝄵, either of these signs can be used, they express the same thing. *Numerator 2* tells us that it is a measure in *two beats* and also that it is simple because it is only a simple

measure that can have *2* as Numerator; *Denominator 2* tells us that the unit of beat is a half-note, simple note, normally divisible by two (𝅗𝅥 𝅗𝅥) and it is this fact which renders this measure simple; the whole fraction $\frac{2}{2}$ tells us that each measure, regardless of the number of notes and rests it contains, must be equal to two half-notes: 𝅗𝅥 𝅗𝅥 and the note, equal to those two half-notes, is the unit of measure; it is a whole note (𝅝).

Now let us analyze a measure in four beats, taking the time-signature $\frac{4}{8}$. *Numerator 4* tells us that it is a measure in *four* beats and also that it is a simple measure because it is only a simple measure that can have *4* as Numerator; *Denominator 8* tells us that the unit of beat is an *eighth-note*, simple note, normally divisible by two (♫) and it is this fact which renders this measure simple. The whole fraction $\frac{4}{8}$ tells us that each measure, regardless of the number of notes or rests it contains, must be equal to four eighth-notes ♪ ♪ ♪ ♪, and the value equal to those four eighth-notes will be the unit of measure; it is a half note (𝅗𝅥).

Chart of All the Simple Measures



The most generally used are the measures in $\frac{2}{4}$, $\frac{3}{4}$ and $\frac{4}{4}$ or **C**; in America, the latter is often called erroneously *common time;* such an expression is inaccurate and the student should refrain from using it. The $\frac{2}{2}$ measure is often indicated by a **C** with a vertical line running through it like this **¢**; it means that it has the same value as a measure in $\frac{4}{4}$ or **C**, but instead of being counted in four and having a quarter-note as unit of beat, it is counted in *two* and has a *half-note* as unit of beat. The Italian expression: "Alla breve" means this kind of time; it is usually played in a faster tempo than $\frac{4}{4}$.

COMPOUND TIME

In *compound time*, the *unit* of *beat* is a *dotted note* (compound note) normally *divisible by three.*

Compound measures are a modification of the simple measures with which they are closely connected; each compound measure derives from a certain

simple measure and vice versa; both have the same number of beats and both have the same kind of note as the unit of beat. The only difference is, that in the *simple measure* the note in question is *simple* (divisible by two), while in the *compound measure* that *note* is *dotted* and divisible by three, its qualification of *compound* being given to the measure.

If in a simple measure the unit of beat is a quarter-note (♩) in its relative compound measure the unit of beat is a dotted quarter (♩.)

If in a simple measure the unit of beat is a half-note (𝅗𝅥) in its relative compound measure the unit of beat is a dotted half-note (𝅗𝅥.)

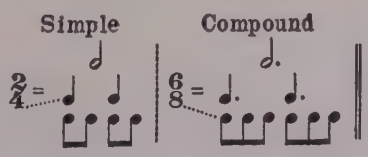
For instance, let us take the measure $\frac{2}{4}$ and find the compound measure related to it.

According to previous analyses, we know by numerator *2* that it is a simple measure in two beats, and by Denominator *4* that the unit of beat is a quarter-note, the unit of measure being a half-note.

To obtain its relative compound measure, we dot each unit of beat, that is, each quarter-note (♩), simple note normally divisible by two (♫) and transform it into a dotted quarter (♩.) compound note, normally divisible by three (♫).

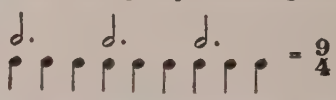
Consequently, this new measure is equal to two dotted quarters (♩. ♩.), each one subdivided into three eighths (♫) making six of them for the whole measure (♫ ♫) and it is the fraction $\frac{6}{8}$ which represents those subdivisions that is taken as time-signature: ♩. ♩. = $\frac{6}{8}$

The compound measure $\frac{6}{8}$ thus obtained, has two beats, each being equal to three eighths indicated by denominator 8; the unit of beat is the value equal to those three eighths: it is a dotted quarter (♩.) and the fact that a dotted quarter is a *compound note* makes of the measure $\frac{6}{8}$ a compound measure. The unit of measure is the value representing the whole fraction $\frac{6}{8}$ or the two units of beat (♩. ♩.): that value is a dotted half (𝅗𝅥.).



Let us now take the measure $\frac{3}{2}$ and find the compound measure that is related to it.

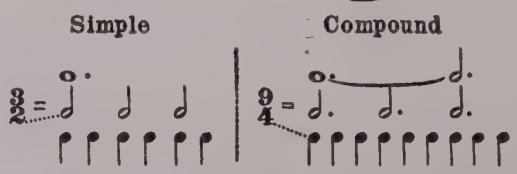
We know by numerator *3* that $\frac{3}{2}$ is a simple measure in three beats, and by denominator *2* that the unit of beat is a half-note (𝅗𝅥), the unit of measure being a dotted whole note (𝅝.) To obtain the compound measure related to it, we dot each unit of beat, that is, each half-note (simple note) and transform it into a dotted half-note (𝅗𝅥.), compound note, normally divisible by three (♩ ♩ ♩). Consequently, this new measure is equal to three dotted half-notes (𝅗𝅥. 𝅗𝅥. 𝅗𝅥.) each one subdivided into three quarters (♩ ♩ ♩) making nine of them for the whole measure, and it is the fraction $\frac{9}{4}$, representing those subdivisions, that is taken as time-signature:



The compound measure $\frac{9}{4}$ thus obtained, has three beats, each being equal to three quarter-notes (♩ ♩ ♩) which are indicated by denominator *4*, the unit of beat is the value equal to those three quarters: *it is* a dotted half-note (𝅗𝅥.) and the fact that a dotted half-note is a compound note makes of the measure $\frac{9}{4}$ a compound measure. The unit of measure is the value equivalent to the whole fraction $\frac{9}{4}$ or to the three units of beat (𝅗𝅥. 𝅗𝅥. 𝅗𝅥.), but in musical notation there is no figure of note representing *three* dotted notes, it is either *two* or *four* but *not* three.

The only way out of it, is to use the value equivalent to the *first two* dotted notes and *tie* it *to the third.*

In this particular case, it is a dotted whole note which represents the first two dotted half-notes and it will be tied to the third dotted half; consequently, the unit of measure in $\frac{9}{4}$ will be written thus: 𝅝. 𝅗𝅥.



The above rule applies to all compound measures having number *9* as numerator; their unit of measure is always the dotted note equivalent to the first two units of beat tied to the third.

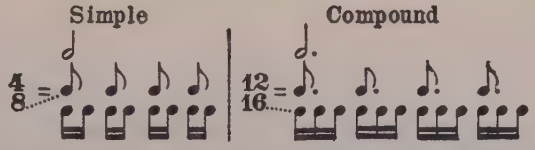
Now let us take the simple measure $\frac{4}{8}$ and find its relative compound measure. We know by numerator *4* that $\frac{4}{8}$ is a simple measure in four beats,

and by denominator *8* that the unit of beat is an eighth-note, the unit of measure being a half-note (𝅗𝅥).

To obtain the compound measure related to it, we dot each unit of beat, that is, each eighth-note, simple note, and transform it into a dotted eighth compound note, normally divisible by three (♪♪♪).

Consequently, this new measure is equal to four dotted eighths (♪. ♪. ♪. ♪.), each one subdivided into three sixteenths, making twelve of them for the whole measure, and it is the fraction $\frac{12}{16}$ representing those subdivisions that is taken as time-signature.

The compound measure $\frac{12}{16}$ thus obtained, has four beats, each being equal to three sixteenths (♬) indicated by denominator *16*; the unit of beat is the value equal to those three-sixteenths: it is a dotted eighth (♪.) and the fact that a dotted eighth is a compound note makes of the measure $\frac{12}{16}$ a compound measure. The unit of measure is the value representing the whole fraction $\frac{12}{16}$ or the four units of beat (♪. ♪. ♪. ♪.), that value is a dotted half-note (𝅗𝅥.)



Those three analyses show us that the numerators of compound measures are either *6*, *9*, *12* while the denominators can be either 2, 4, 8 or 16

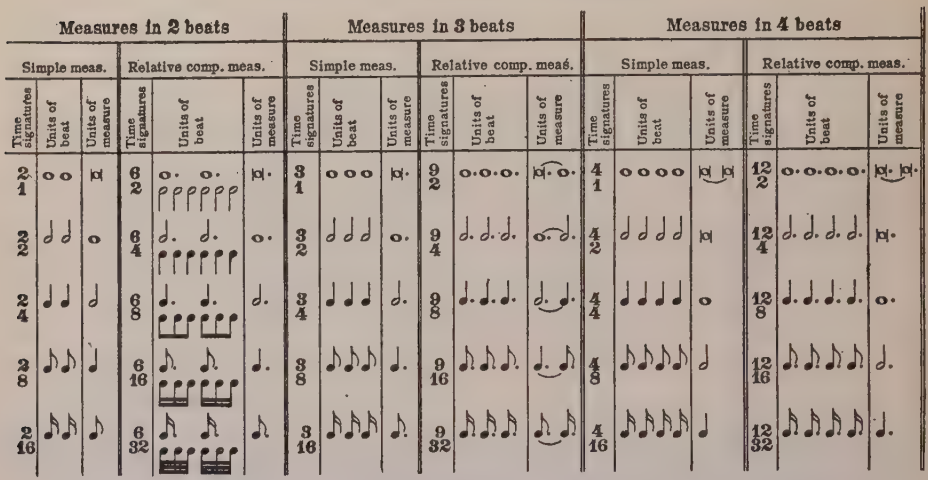
Before ending this chapter, the writer wants to impress once more on the mind of the student that it is the *numerator* alone which will tell him at first glance whether the time is simple or compound; if the numerator is either *2*, *3* or *4*, he knows positively that the *measure is simple*, that it has as many beats as indicated by the said numerator and that the unit of beat is the value of note represented by the denominator.

If the numerator is either *6*, *9* or *12*, the student will know positively that the *measure is compound;* in that case each beat is equal to *three notes* of the value represented by the denominator, the unit of beat being the *dotted note equal to those three* notes; and there will be as many beats as number *3* goes in the numerator, therefore:

Measures having Numerator *6* have two beats.
Measures having Numerator *9* have three beats.
Measures having Numerator *12* have four beats.

REMARK: It is the *unit* of *beat* which proves a measure to be simple or compound and *not the unit of measure*, the latter having nothing to do in the matter.

Chart of all the Simple Measures and their Relative Compound Measures



Compound measures having *32* as Denominators which would mean that each beat is equal to three thirty-seconds ( ) are hardly ever used. Still, Beethoven employed the time signature $\frac{12}{32}$ in the Arietta of his Sonata, Op. 111, in C minor.

ODD MEASURES IN 5, 7, 9 AND 11 BEATS

Occasionally, one comes across measures whose time-signature has either *5*, *7*, *9* or *11* as numerator, the denominator being generally *4* though not always so.

Those are combinations of simple measures in different time alternating with each other.

The one in $\frac{5}{4}$ is composed of a measure in $\frac{2}{4}$ alternating with one in $\frac{3}{4}$ like this: $\frac{5}{4}=\frac{2}{4}+\frac{3}{4} \mid \frac{2}{4}+\frac{3}{4} \mid \frac{2}{4}+\frac{3}{4} \mid$ and so on.

Frequently, instead of beginning with the measure in two beats, it is begun with the measure in three beats like this: $\frac{5}{4}=\frac{3}{4}+\frac{2}{4} \mid \frac{3}{4}+\frac{2}{4} \mid \frac{3}{4}+\frac{2}{4} \mid$ and so forth.

The only difference between the two combinations is in the place occupied by the accented beats. When the $\frac{5}{4}$ begins with the measure in two beats followed by the one in three beats the accents fall on the first and third beats like this: *1* 2 *3* 4 5 | *1* 2 *3* 4 5 | etc., as shown in the example taken from Tschaikowsky's "Pathetic Symphony," and when it is the other way, the accents fall on the first and fourth beats like this: *1* 2 3 *4* 5 | *1* 2 3 *4* 5 | as seen in the example taken from a song by Paul Vidal.

$\frac{7}{4}$ is a combination of a measure in $\frac{4}{4}$ alternating with one in $\frac{3}{4}$ like this: $\frac{7}{4}=\frac{4}{4}+\frac{3}{4} \mid \frac{4}{4}+\frac{3}{4}$.

$\frac{9}{4}$ is a combination of a measure in $\frac{4}{4}$ followed by one in $\frac{3}{4}$ and ending with $\frac{2}{4}$ like this: $\frac{9}{4}=\frac{4}{4}+\frac{3}{4}+\frac{2}{4}$ | $\frac{4}{4}+\frac{3}{4}+\frac{2}{4}$.

$\frac{11}{4}$ is a succession of two measures in $\frac{4}{4}$ followed by one in $\frac{3}{4}$ then again two measures in $\frac{4}{4}$ followed by one in $\frac{3}{4}$ like this: $\frac{11}{4}=\frac{4}{4}+\frac{4}{4}+\frac{3}{4}$ | $\frac{4}{4}+\frac{4}{4}+\frac{3}{4}$ | and so forth.

All these are simple measures, the unit of beat being a quarter-note as indicated by the denominator 4.

Like any other simple measure, each of those odd measures has a compound measure which is related to it; in multiplying the numerator by three and the denominator by two, one will find out which they are theoretically although they are seldom used.

Measures in 5 beats			Measures in 7 beats			Measures in 9 beats		
Simple		Compound	Simple		Compound	Simple		Compound
5x3	=	15	7x3	=	21	9x3	=	27
4x2	=	8	4x2	=	8	4x2	=	8

In order to indicate the exact position of the strong beats, it is customary to separate those combined measures by a vertical dotted line, the strong beats following immediately the dotted line as well as the bar of measure; consequently:

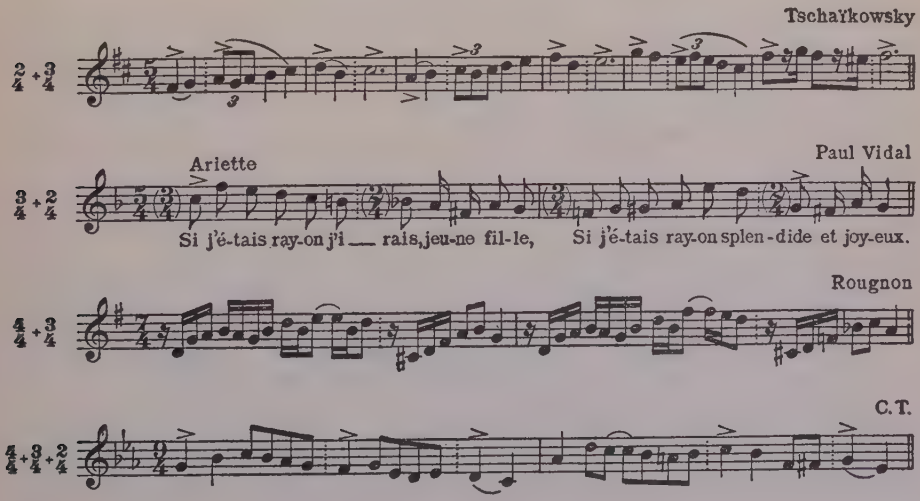
In the measures in 5 beats, the strong beats are the { 1st and 4th; or / 1st and 3rd.

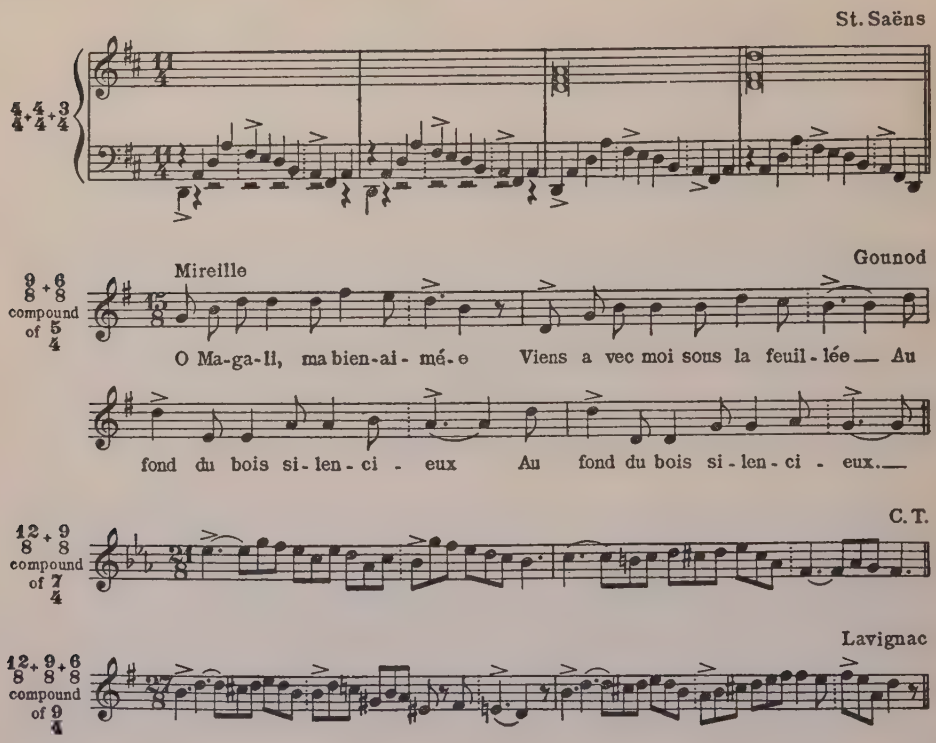
In the measures in 7 beats, the strong beats are the 1st and 5th.

In the measures in 9 beats, the strong beats are the 1st, 5th and 8th.

In the measures in 11 beats, the strong beats are the 1st, 5th and 9th.

Still, very often, to facilitate the execution, editors will set the time-signature at the beginning of each measure as can be seen among the following examples:





ACCENTS

Just as they do in a spoken language where they emphasize certain syllables of words in order to obtain a clear and distinct enunciation, they do so in music. Some beats of the measure, being more important than others, are *accented;* the result thus obtained is precision and a feeling of perfect equilibrium. The regular recurrence of those accents right through a musical composition determines its *rhythm.*

The beats which are accented are referred to as *strong* and those which are unaccented are called *weak.*

In the measures in two beats, the first beat is strong, the second is weak.

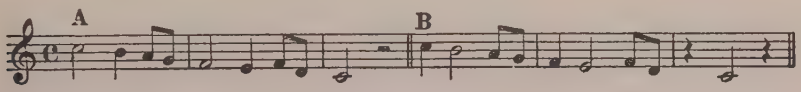
In the measures in three beats, the first beat is strong, the second and third are weak.

In the measures in four beats, the first beat is strong, the third, semi-strong, the second and fourth are weak.

One may notice that the *first* beat of *any measure* is always *strong*, whether it is a measure in two, three or four beats.

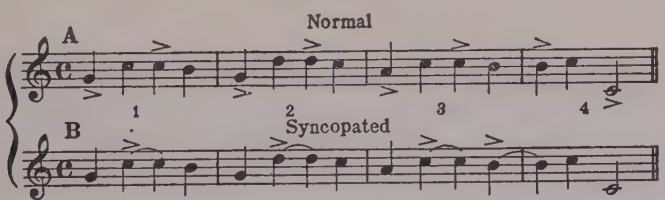
The above rule applies not only to measures in general but to individual beats as well, that is, when subdivided into two, three, four or more parts, the first part is slightly accented, in spite of the fact that the beat in question is perhaps a weak one in the measure.

The greater the value a note has in the measure, the more importance it possesses and therefore, the greater is the emphasis given to it in the execution. Owing to this fact, it gives to the listener a much more satisfactory feeling if the note of greater value is placed at the beginning of the measure, consequently on the strong beat, than the other way around.

In playing the two following examples, one after the other, several times, the student will realize the truth of this statement.

Still, there are times when deliberately those rules are broken that is, weak beats or weak parts of beats are accented purposely, while strong beats or strong parts of beats are left unaccented; in other words, a bright light is thrown unexpectedly on parts of the musical phrase which by right, should remain in the shade, and parts which should stand out, are given no importance at all. Such a displacement of accents is called "Syncopation."

SYNCOPATIONS

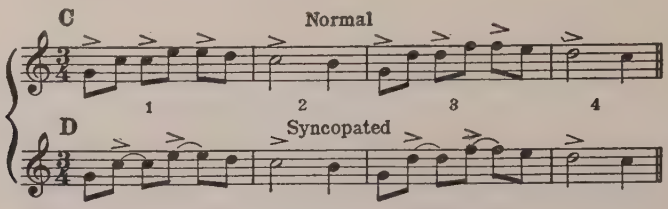
A syncopation is the result of a note being emitted on a weak beat and tied to a note of the same name and of the same pitch occupying the following strong beat; owing to the tie, the latter is not sounded and the accent which by right belongs to it, is given instead to the preceding note which occupies the weak beat which, otherwise, would be unaccented.



Ex. A is normal because in each measure the notes occupying the 1st and 3rd beats (strong beats) are slightly accented as they should.

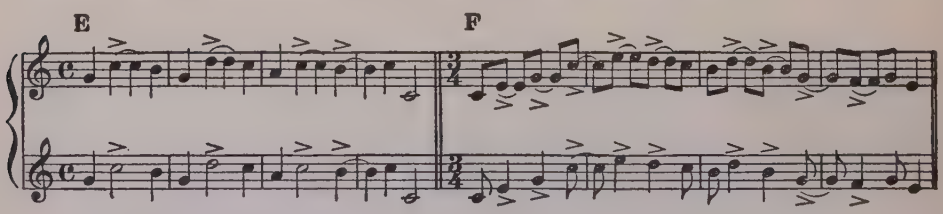
In each of the first three measures of Ex. B, the note occupying the third beat is tied to the preceding note occupying the second beat, consequently, it is not sounded, and the accent it should have received is shifted to the second beat although the latter is ordinarily a weak beat. The result is a *syncopation*. In the fourth measure of the same example, the *b* occupying the first beat

(strong beat) is tied to the preceding *b* occupying the fourth beat (weak beat) of the third measure; therefore the first *b* receives the accent which, by right, should have been given to the second *b*, the result being again a *syncopation*. The same rule applies also to parts of beats.



As stated before, when a beat, strong or weak, is *subdivided*, the first part of it is strong and slightly accented, the others are weak and unaccented; consequently Ex. *C* is normal, as there is no reason for not permitting the first eighth of each beat of receiving its proper accent.

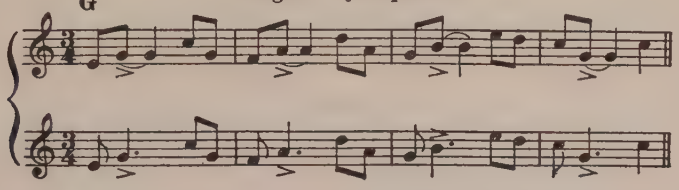
In Ex. *D*, the first eighth of each beat is tied to the second eighth of the *preceding* beat and therefore it is not sounded; the accent that it should have received is given instead to the eighth occupying, in each instance, the second half of the preceding beat. The result is a succession of syncopations.

When the two tied notes forming a syncopation are in the same measure and have the same value, they usually are put together in the shape of the note which is equal to both of them, but when the second of the tied notes belongs to another measure, the tie has to be used as seen below.

All the syncopations analyzed so far are *regular*, that is, syncopations in which the two tied notes are of *equal value;* owing to this fact, they possess a certain swing which is quite fascinating, especially if they are well accented.

In contrast with these, there are the *irregular syncopations* in which the two tied notes are of *unequal value*, the second being of a larger value than the first; these are altogether devoid of swing, and give to the hearer the rather unpleasant sensation of something being decidedly out of gear. In France, such a combination is very characteristically called a "limping syncopation" and is seldom used, but irregular syncopations are found quite frequently in old English Ballads most generally in the form illustrated here where an eighth belonging to the second half of a beat is tied to a quarter-note occupying the entire following beat; consequently the syncopation in question

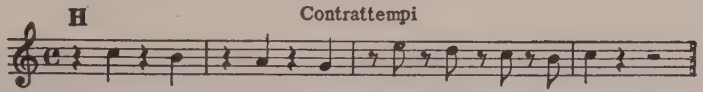
is equal to a beat and a half and is usually written in the form of a dotted quarter (♩.) instead of writing out the two notes and tying them.

G Irregular Syncopations

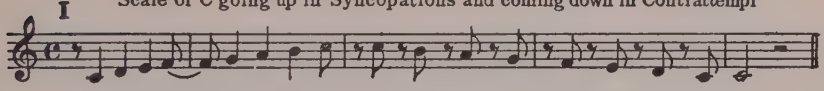


Another variety of syncopation is the "Contrattempo," an Italian expression which in English might be translated by: "Against the Rhythm." It is a note, preceded by a rest, starting all of a sudden on a weak beat or weak part of beat but *not carried* over the following strong beat or strong part of beat; instead, it is cut short either by a rest or followed immediately by another note occupying the first part of the next beat.

H Contrattempi



I Scale of C going up in Syncopations and coming down in Contrattempi



BEATING OF TIME

Beating time with the hand while singing Solfeggio lessons is done to train the student in realizing the place that each beat occupies in the measure and also its duration according to the amount of time allotted to each beat. When beating of time has been well drilled into the student, it becomes part of himself and then enables him to follow easily the beating of the conductor, thus getting his cue accurately if he plays or sings with the accompaniment of an orchestra.

There are three ways of beating: in *two beats*, *three beats* and *four beats*.

For two beats the forearm goes down and up.

For three beats the forearm goes down, then to the right and up.

For four beats the forearm goes down, then to the left, then to the right on a straight line and up.

Two beats

Three beats

Four beats

PART III

MUSICAL SOUNDS

Sound is the general name for anything audible produced by bodies in vibration and carried to the ear by waves of air.

Sounds are of *regular* or *irregular* vibrations; *regular*, constant vibrations produce *tones; irregular*, jerky vibrations produce noises.

The difference between a noise and a tone is, that owing to their regularity, one can measure exactly the number of vibrations contained in a tone and therefore determine its pitch, while the vibrations which produce a noise cannot be analyzed because of their irregularity which renders them indefinite. Slow vibrations produce low tones, rapid vibrations give high tones.

Vibrations are counted either as *single* or as *double*, just as compared as you might say, to a trip on a railroad where the going and coming back may be mentioned as *one* return trip; but if each is counted separately, it then makes *two* single trips.

In France, vibration numbers always refer to *single* vibrations, while in England and America, *double* vibrations have been adopted, therefore American numbers are always the half of the French numbers. It really makes no difference provided one mentions which of the two ways is meant.

In this chapter, all numbers will refer to *double* vibrations except when otherwise specified.

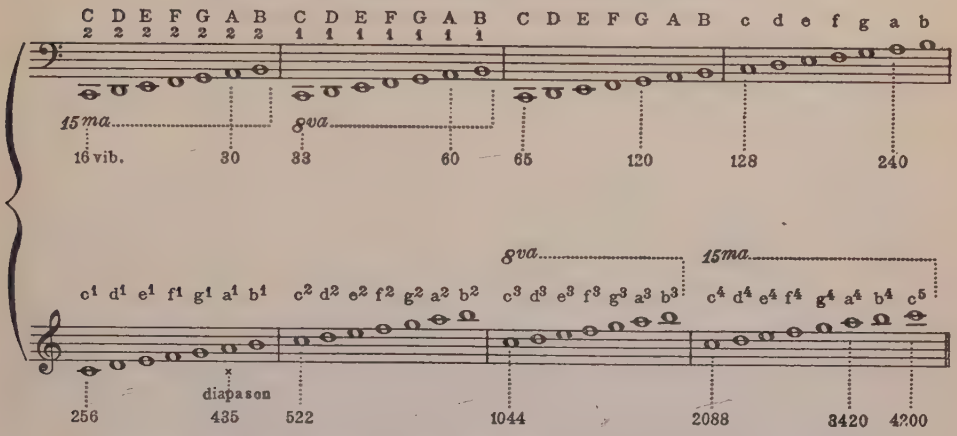
A sound takes on a musical character only from 27 to 30 vibrations by second up; that number produces the A_2 which is the lowest note on a piano keyboard. On the organ there are five notes lower than the A_2 (G_2, F_2, E_2, D_2, C_2); these are not included in a piano keyboard as they do not possess a musical quality, the C_2 having only 16 vibrations per second. When those five notes are sounded alone, one could hardly determine their pitch, but when used in octaves they act as a reinforcement of the notes above.

The highest note having a musical character is, according to some scientists c^5, the last on the piano keyboard and which has 4200 vibrations per second; still, the little flute (called also piccolo) takes d^5, having 4700 vibrations.

One may notice that the number of vibrations separating c^5 from d^5 is 500 vibrations per second, while the number of vibrations separating C_2 from D_2 at the bottom of the piano keyboard is approximately 3.

Still, one should not think that d^5 (4700 vibrations) is the highest sound that our ear can perceive. Far from it, because there are, in nature, thousands of sounds containing a far greater number of vibrations, but these are not musical sounds because one cannot determine their pitch in the scale. Among these sounds, the highest on record seems to be the chirp of the cricket, which has approximately 36,850 vibrations per second.

Chart of All the Natural Notes of the Piano Keyboard with the Individual Number of Each Octave



A musical tone has three qualities: *pitch*, which is the result of more or less vibrations, *intensity* which depends on the force with which the vibrations have been set in motion, the result being a loud tone or a soft tone, *timbre*, which is the individual quality of a sound and which varies according to the special form of the sound waves, this latter being determined by the kind of sounding body producing the tone. It is by means of this quality, that one can recognize whether a note is produced by a string instrument, a piano, a wood or brass instrument, a human voice, etc.

PITCH OR DIAPASON

The absolute pitch of a note is determined by the number of vibrations it makes per second, this being called "vibration number." From a certain note taken as a standard, all the other notes derive their intonation; for several centuries the musical world has been accustomed to take as that standard the middle *a* or a^1 which is the one written in the second space of the staff, and it is by that note that most all instruments are tuned. But to make sure that the pitch of that a^1 will not be a matter of guesswork a little instrument called "*tuning-fork*" is used; it may be described as a fork-shaped piece of steel having two equal prongs that vibrate with a definite frequency whenever struck; it produces the sound of a^1 at the rate of *435* vibrations per second. This useful little device was invented early in the 18th Century by John Shore, trumpeter to George I, King of England; but at the time of its invention the a^1 that it produced had only 419 vibrations; it is being made now to meet the present standard of *435* which is in use since 1859, and is called the *French* or *International Pitch.*

Still, it was not without a considerable struggle lasting several centuries that the musical world came to an understanding and finally adopted an International Pitch, the history of its evolution is interesting to know.

Up to the beginning of the 16th Century there was no recognized standard and the pitch varied according to the fancy of local musicians and organ builders. There was sometimes a difference of a fourth between the pitch of the organ belonging to one church and the organ belonging to the church of a nearby town. As an illustration, in the year 1495, there is on record the pitch of one organ in Halberstadt (Germany) registering *505* as vibration number; compared to our present pitch its a^1 corresponded to a note hovering between our b^1 (3rd line) and c^2 (3rd space), while a few years later in 1511, there is on record the pitch of an organ in Heidelberg (Germany) registering only 377 as vibration number, its a^1 being about what is our present f♯, more than a perfect fourth lower than the Halberstadt organ. Yet, the latter case was an exception, as the high pitch was very much in favor during that period, though it gave lots of trouble to vocalists and instrumentalists; organists had constantly to transpose a fourth below all the music sung by their choirs in order to remain within the range of male voices. But little by little they began to realize the necessity of lowering the pitch, especially as about that time (1520), the violin made its appearance and it could not bear the high tension to which lutes and viols had been submitted. As the musical world realized from the first that this newcomer would outshine all its predecessors and become the king of the orchestra, they were willing to cater to it in order to facilitate the establishment of its reign. So the pitch began to be lowered and, as it happens often it went to the extreme and fell, in some cases, as far down as $a^1 = 393$ which was recorded in Strasbourg in 1716. Already in the early part of the 17th Century, the musical world had begun to realize the danger of the constant wavering of the pitch which created so much confusion and misunderstanding, and to remedy the situation a mean pitch was established, its a^1 averaging about 420 vibrations; it held its own for about 200 years; the name of: "Classical Pitch" was given to it as it was in use during the period of classical composition. Händel had in his possession a tuning-fork registering 422-5 vibrations, and Stein tuned Mozart's piano to a fork $a^1 = 421\text{-}6$.

In France they had favored a very low pitch, especially for church purposes, it was called "ton de chapelle." In 1789, there was in Versailles an old organ which had 395-8 as vibration number, its a^1 being what to-day is about an *f*♯ (first space), a difference of a minor third with our present pitch. Apparently, what was satisfactory to some musicians was not so to others, because a few years later at the Congress of Vienna, which took place in 1816, the military bands declared that in order to obtain a more brilliant effect, they were going to raise the pitch and so they did. From then on, the tendency to force the pitch upward became almost alarming and to put a stop to it, as far as France was concerned, the French Academy in 1859, named a commission which was instructed to make a thorough study of the matter and present its report. That commission was composed of the most prominent scientists and musicians of the time, this latter group consisting of Auber, Halevy, Ambroise

Thomas, Berlioz, Meyerbeer and Rossini. As a result, it was decreed that a diapason (pitch) giving 870 *single* vibrations per second (435 double) for a^1 would be adopted and become obligatory for all the musical institutions of France authorized by the Government and it was called "Diapason Normal." Eventually, all the other countries adopted it and it became known as the *International Pitch.*

In our present day, though the International pitch of $a^1 = 435$ has been adopted everywhere, at times they use a higher one of 450 especially for operatic performances as it shows off the voices to better advantage; it is called: "Concert Pitch" or "High Pitch" to differentiate it from the *Diapason Normal* which is often referred to as "Low Pitch," the difference between the two being about a chromatic half-step.

STEPS AND HALF-STEPS

Consecutive notes belonging to our modern musical scale are separated from each other by steps and half-steps, the latter being the smallest distance that exists between two notes, at least in our occidental conception of music. Oriental music contains quarter and even eighth of steps which give us the impression that the notes are out of pitch but it is only because our own sense of hearing is not keen enough to appreciate those fine tone shadings.

There are two kinds of half-steps: *Chromatic* and *Diatonic.*

The *chromatic half-step* is the one which exists between two notes of the *same name,* just like a person moving from one chair to the next, either to the right or to the left. Ex.: *d* to *d*♯ to the right, *d* to *d*♭ to the left; *a* to *a*♯ to the right, *a* to *a*♭ to the left.

The *diatonic half-step* is the one which exists between two notes of a *different name* just like two persons sitting close to each other; Ex.: *d* to *e*♭ to the right, *d* to *c*♯ to the left; *a* to *b*♭ to the right, *a* to *g*♯ to the left.

In England and America, the chromatic half-step is called an *augmented prime,* the diatonic half-step is a *semitone* and the whole-step is a tone. Those expressions are not quite as accurate as *step* and *half-step* because the word *tone* creates in one's mind the idea of a sound, while *step* creates the idea of a distance.

Chart of Some Chromatic Half-Steps as Compared to Diatonic Half-Steps

Ascending		Descending	
Chromatic	Diatonic	Chromatic	Diatonic
c to c♯	c to d♭	c to c♭	c to b
c♯ " c𝄪	c♯ " d	c♯ " c♮	c♯ " b♯
d♭ " d♮	d♭ " e𝄫	d♭ " d𝄫	d♭ " c
d " d♯	d " e♭	d " d♭	d " c♯
e♭ " e♮	e♭ " f♭	e♭ " e𝄫	e♭ " d
f♭ " f♮	f♭ " g𝄫	f♭ " f𝄫	f♭ " e♭
a " a♯	a " b𝄫	a " a♭	a " g♯
b " b♯	b " c	b " b♭	b " a♯

One may notice that on the keyboard of a piano, the same key at times may either be the chromatic or the diatonic half-step between itself and the note immediately above or below. For instance, *c* to *c*♯, chromatic half-step and *c* to *d*♭, diatonic half-step, are alike on the piano; that is, they are played on the same keys and have the same sound; in appearance the difference is only a matter of name, but theoretically these two half-steps are not alike for a reason that we will endeavor to explain.

It has been agreed to divide the number of vibrations contained in a whole step into *nine* equal parts called *commas*. A *comma* is the smallest distance between two tones that the ear can perceive; the higher the note, the greater amount of vibrations contained in a comma. At the top of the piano keyboard *one comma* contains approximately *sixty* vibrations, in the middle of the keyboard each contains approximately *twenty* and at the very bottom each comma contains hardly *one* vibration. It has been discovered that the chromatic half-step was larger than the diatonic half-step, as the *diatonic* contains only *four* commas, while the *chromatic* contains five; consequently there is a difference of *one comma* or the *9th* of a step between the two.

Of course on the piano that difference does not show because the tones are "ready made" as you might say, the same sound serving for both half-steps as mentioned before, but on instruments of absolute pitch where the executant makes his own notes, like the violin, the 'cello and others, the difference between the two half-steps is observed. For instance, when a violinist plays the interval *c to c*♯, *chromatic* half-step containing five commas, he puts his finger a trifle farther on the string to reach the c♯ than if he played *c to d*♭, *diatonic* half-step, containing only four commas.

As long as it is impossible to show that difference on instruments having a keyboard like the piano, the organ, and also wind instruments like the flute, the clarinet, the saxophone, etc., a system has been agreed upon which cuts the whole step or nine commas into two equal parts; each half-step therefore is given four and a half commas; a half comma is taken away from the chromatic half-step, which by right should contain five commas, and given extra to the diatonic half-step which really should contain only four. Thus all half-steps are alike, each one being the exact twelfth of the octave. Such a system is called "equal temperament" and was evidently inaugurated during the Classical Period as Bach's 48 Preludes and Fugues were written specifically for the "*Well-Tempered Clavichord.*" (The clavichord was the "piano" of the 18th century, which, perfected, became the instrument of to-day.)

One may remark that if such is the case, when a string instrument or any other instrument of absolute pitch is played to the accompaniment of an instrument of equal temperament like the piano or organ, the result must, at times, sound out of tune. In a way it is so, but the notes which are not quite alike are of short duration and the listener has not the time to realize the difference; besides, that difference, which is only a half comma or the one-eighteenth

of a step is so slight that it would require a most accurate ear to notice it.

Instruments of Absolute Pitch

All Bow-string Instruments: Violin, Viola, Violoncello, Double bass: also the Harp (plucked strings).

The Natural Brass Instruments: Horn, Trumpet, Bugle, Trombone, etc.

Instruments of Equal Temperament

String Instruments with Fingerboard: Guitar, Mandolin, Banjo, etc.

String Instruments with Keyboard: Organ, Piano, Harpsichord, Harmonium.

Wind Instruments with Holes, Slides or Valves: Flute, Clarinet, Oboe Bassoon, Saxophone, Tuba; some variety of Cornet, Trumpet, etc.

ENHARMONY

In the preceding chapter we saw that the black note which is in the center of *f* and *g* could at times be called *f*♯ and at other times be called *g*♭. It goes to show that on equal tempered instruments, notes have more than one name, in fact each one has three names, two beside the one by which it is called first. Ex. *c*♯ is played on the same key as *d*♭ and so is *b*𝄪; *e* is played on the same key as *f*♭ and so is *d*𝄪, etc., those are called *enharmonic* notes and their definition is as follows: *enharmonic notes* are several notes played on the *same key*, having the *same sound* but having *different names;* the relationship existing between them is called *enharmony.*

Chart of all the Enharmonic Notes

c is either b♯ or d𝄫.
c♯ " " b𝄪 or d♭.
d " " c𝄪 or e𝄫.
e♭ " " d♯ or f𝄫.
e " " d𝄪 or f♭.
f " " e♯ or g𝄫.
f♯ is either e𝄪 or g♭.
g♯ " " a♭ (two names only)
a " " g𝄪 or b𝄫.
b♭ " " a♯ or c𝄫.
b " " a𝄪 or c♭.

Remark: The writer wishes to caution the student to be very careful about giving to notes their right name according to the tonality to which they belong and not giving them any enharmonic name which first comes into their mind thinking that "it does not make any difference"; for instance, if in a certain composition there is an *f* double sharp, to call it *g* instead, or if there is an *f*♭ call it *e* and so forth. If in a certain tonality an *f* double sharp is required, they have no use whatsoever for a *g;* the *f* double sharp plays in the said

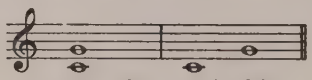
tonality a rôle that a *g* cannot play; or if an *f♭* is required, they have no use for an *e* because the latter cannot play the rôle of an *f♭*; each note belongs to an altogether different musical family.

Enharmonic scales and tonalities will be analyzed later.

INTERVALS

An interval is the distance which separates two notes from each other; it is measured by the number of notes which it contains, including the lowest and the highest, and the name of the interval expresses the number of those notes.

When the two notes are sounded together, the interval is called *harmonic* and when the two notes are sounded one after the other, the interval is *melodic*.

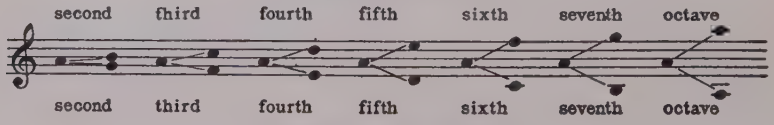


The interval containing 2 consecutive notes is a second.
" " " 3 " " " " third.
" " " 4 " " " " fourth.
" " " 5 " " " " fifth.
" " " 6 " " " " sixth.
" " " 7 " " " " seventh.
" " " 8 " " " an octave.
" " " 9 " " " a ninth, etc.

there is no limit to them.

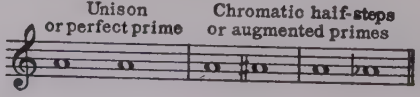
An interval is either *ascending* or *descending*. It is *ascending* when taken upward, that is, from the lower note to the higher one; it is *descending* when taken downward, that is, from the higher note to the lower one. When an interval is mentioned, it always refers to an ascending one unless otherwise specified.

Ascending intervals.

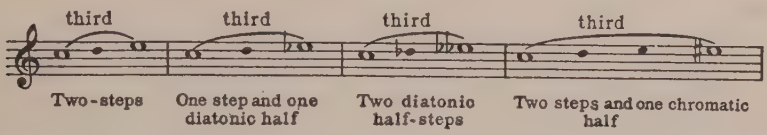


Descending intervals.

Unison is the result of the same tone being produced simultaneously by several voices or instruments playing or singing together, therefore unison is not an interval. In America and England, unison is called a *perfect prime*, the chromatic half-step being called an augmented prime.



Intervals containing the same number of notes are not always alike. For instance *c* to *e* is a third, because it contains three notes, *c*, *d*, *e*, but *c* to *e♭* is also a third and so is *c* to *e♭♭*, as well as *c* to *e♯*; however, those thirds are not alike because from *c* to *e* there are two whole steps; from *c* to *e♭* there is one step and a diatonic half; from *c* to *e♭♭* there are only two diatonic half-steps; while from *c* to *e♯* there are two steps and one chromatic half.



This goes to show that there are different *kinds* of thirds, normal ones, smaller ones, very small ones and extra large ones. It is the number of *steps* and *half-steps* which they contain that makes the difference between them, and so it is with all intervals.

Consequently, intervals take their *name* from the number of *notes* that they contain and their qualification from the number of *steps* and *half-steps* which separate those notes from each other.

The different qualifications given to intervals are: *major*, *minor*, *perfect*, *diminished* and *augmented*.

Standard or, as you might say, *normal* intervals are either *major* or *perfect*. When they are called *major* they *cannot bear* the qualification of *perfect*, and when called *perfect* they *cannot* also be *called major*, it is one thing or another. Those bearing the qualification of *perfect* are the *prime*, the *fourth*, the *fifth* and the *octave*.

Those bearing the qualification of *major* are the *second*, the *third*, the *sixth* and the *seventh*.

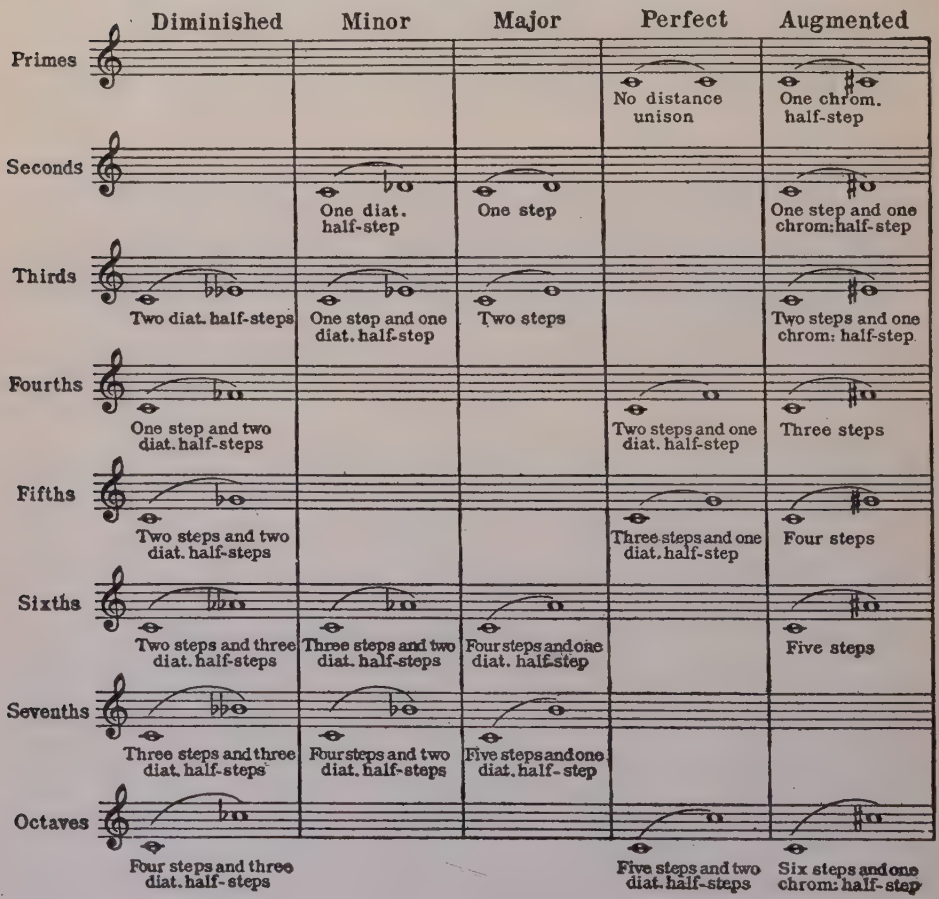
Intervals *larger* by a chromatic half-step, than major or perfect, are called *augmented*.

Intervals *smaller* than *major*, by a chromatic half-step, are called *minor*, and when still smaller by a chromatic half-step are called *diminished*, while intervals which bear the qualification of *perfect*, when rendered smaller by a chromatic half-step, are called directly *diminished*, consequently, intervals which, when normal, are called *perfect*, have only *three* qualifications, *perfect*, *diminished* and *augmented;* those are the fourth, the fifth and the octave.

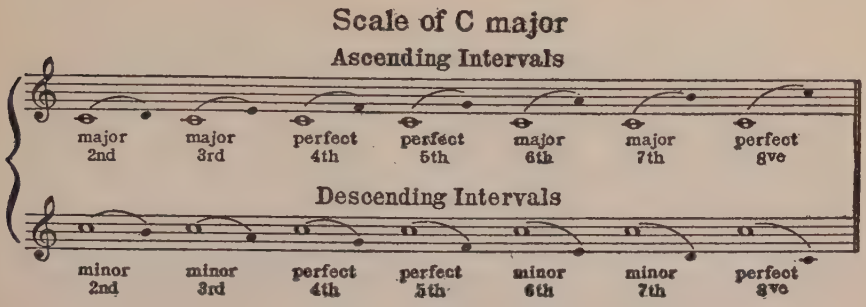
Intervals which, when normal, are called *major*, have generally *four* qualifications: *Major*, *minor*, *diminished* and *augmented;* they are the third and sixth. The second and the seventh although called major when normal are exceptions to that rule, as the second cannot be diminished while the seventh cannot be augmented.

Prime.....perfect...augmented.
Second.....minor..major.....augmented.
Third.....diminished minor..major.....augmented,
Fourth.....diminished .....perfect...augmented.
Fifth.....diminished .....perfect...augmented.
Sixth.....diminished minor..major.....augmented.
Seventh ....diminished minor..major.....
Octave.....diminished .....perfect...augmented.

Chart of all the Intervals and their formation in steps and half-steps



In major scales, *ascending* intervals built on the tonic (key-note) are all either *major* or *perfect*, and all the descending intervals built on the tonic, are either *minor* or *perfect*.

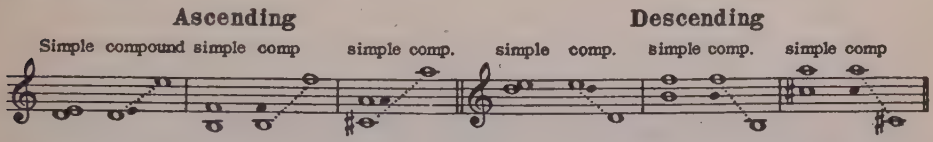


SIMPLE AND COMPOUND INTERVALS

Simple Intervals are those which are contained within the octave, therefore, all intervals from the prime up to the octave, are simple.

Compound Intervals are those which exceed the perfect octave either above or below, consequently, the augmented octave is already a compound interval; it is derived from the augmented prime.

All simple intervals can be transformed into compound intervals by transporting the upper note one or two octaves higher, or transporting the lower note one or two octaves lower.



The above example gives the result obtained so far as the musical combination is concerned, but does not give the exact distance created between the two notes which would enable one to give a name to the compound interval in question. In order to do so, one should *add seven* to the number of notes contained in the simple interval or as many times *seven* as necessary to obtain a still larger one. On the other hand, to find the simple interval of a given compound interval, one should *subtract* seven or as many times seven as are contained in the number of the interval in question.

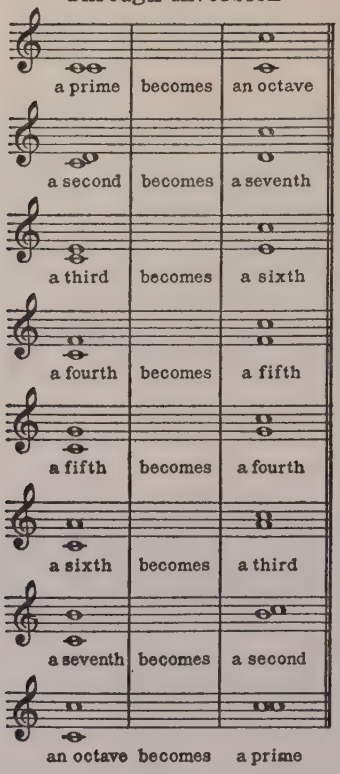
The qualification remains the same for both intervals, for instance: a major third becomes a major tenth; an augmented second an augmented ninth; a diminished fifth a diminished twelfth; while the simple interval of a major thirteenth becomes a major sixth, of a perfect eleventh, a perfect fourth, etc.

INVERTED INTERVALS

To invert an interval is to change the position of its two notes in such a way that the lower becomes the higher or the higher becomes the lower, yet, both intervals remaining within the octave.

The result obtained through such an operation is called *inversion.*

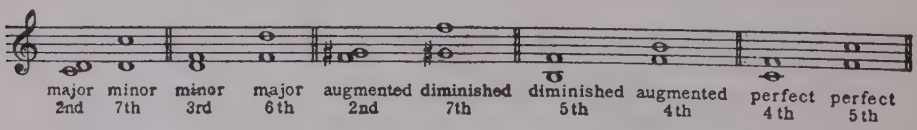
Through inversion



In looking at the above chart, one may notice that the smaller the first interval, the larger is its inversion and vice versa.

One may also notice that if the number of an interval is added to its inversion, it always makes number *9*, consequently to find quickly the inversion of a given interval, one should subtract its number from *9* and will find the answer; for example, the inversion of a third is a sixth because *3* from *9* equals 6; the inversion of a seventh is a second because 7 from 9 makes 2, etc.

As for the qualifications, they are in direct opposition to each other, that is, *major* intervals become *minor*, *minor* become *major*, *augmented* become *diminished*, *diminished* become *augmented*, but *perfect* remain *perfect*.



CONSONANT AND DISSONANT INTERVALS

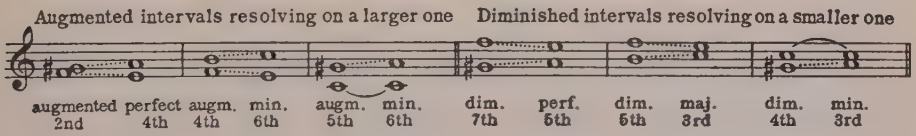
Intervals are divided in two classes: *Consonant* and *Dissonant*.

Consonant intervals are those which are harmonious, pleasing in themselves and requiring no further progression to make them satisfactory; they are generally called *consonances.*

Dissonant or *inharmonic* intervals are those which, when sounded, give a feeling of unrest and a desire for some other interval to follow in order to obtain a sensation of completion; when such is the case, the second interval which seems to be the sequel of the first is called *resolution.* Dissonant intervals are called *Dissonances.*

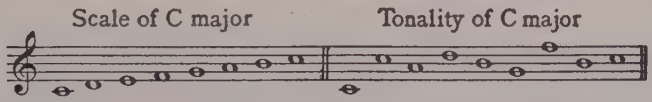
Consonances	Dissonances
Perfect fourths.	Major and minor seconds.
Perfect fifths.	Major and minor sevenths.
Perfect octaves.	and all augmented and
Major and minor thirds.	diminished intervals.
Major and minor sixths.	

Augmented intervals have an irresistible tendency to resolve on a still larger interval, while *diminished* intervals are strongly attracted toward a smaller one.



SCALES

A modern diatonic scale is a succession of eight consecutive notes joined together according to a pattern obtained through the laws of nature which govern the resonance of all sonorous bodies. When the notes follow each other in a direct succession, the series is called *scale* but when the notes are disconnected, the musical family to which they belong is called *tonality.*



It was Pythagoras, the celebrated Greek philosopher of the Sixth Century, inventor of the multiplication table, who first discovered the connection existing between music and mathematics according to the laws of acoustics.

Let us analyze the principles on which he founded his interesting discovery to which we owe the scientific formation of our modern scale.

When a tone is produced, we think that we hear that one tone alone but, in reality, several secondary tones are sounded at the same time owing to the fact that when a sounding body is struck, it vibrates upward and downward not only as a whole but in its various fractional parts as well; each half, each third, fourth, fifth, sixth, etc., vibrates by itself and produces a tone whose pitch corresponds to its size, that is, the smaller the part, the higher the note.

The points where those divisions *meet* are called *nodal points;* they remain at rest during the vibrations of the other parts of the sounding body.

The note produced by the vibrating body in its entirety is called the *generator* and those produced by the divisions are called *harmonics, overtones or undertones.*

Those harmonics being rather faint are more or less drowned by the sound of the generator and it requires a very keen and well-trained ear to detect them, but by means of an instrument called *sonometer* they can be registered accurately.

Harmonics are used to great effect on various string instruments, violin, 'cello, harp, guitar, zither, etc. It is by lightly touching with the finger-tip a nodal point of a violin string, while drawing the bow close to the bridge, that the player obtains those high, soft, pure, ethereal notes which are so much admired. On wind-instruments, from which they are obtained by varying the intensity and direction of the air-current, they are indispensable for extending and completing the natural scale; thus the bugle and French horn, which yield but one fundamental note, depend entirely on the harmonics for the production of their scale; the flute relies also on over-blowing for its upper register, etc.

Scales are scientifically formed by the harmonics of certain fundamental notes or *generators* which are in close relation to each other.

There are two kinds of diatonic scales: major and minor.

Major scales are formed by the *overtones* (upward harmonics). *Minor scales* are formed by the *undertones* (downward harmonics).

MAJOR SCALES

The scale of C major has been taken as a model after which all the other major scales have been built.

Now let us take the C piano string, two octaves below *middle c* and analyze its harmonics which have partly contributed to the formation of the scale of C.

When struck by the hammer:

The full string produces C (two octaves below c^1 called middle c).

The half of the string produces its octave, c (one octave below c^1).

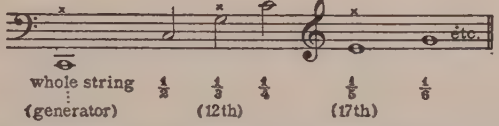
The third of the string produces its twelfth, g (four notes below c^1).

The fourth of the string produces its fifteenth, c^1 (middle c).

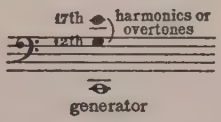
The fifth of the string produces its seventeenth, e^1 (two notes above c^1).

The sixth of the string produces its nineteenth, g^1 (five notes above c^1).

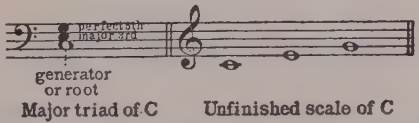
and so forth, down to the one-sixteenth of the string which produces the same note as the generator C at four octaves distance (c^3). No doubt the divisions could be kept up almost indefinitely were it not for the fact that the larger the division, the smaller the section, and the higher and the fainter the note produced, so that eventually, even a sonometer could not register those sounds with accuracy.



The four first divisions in the series of overtones are the most important on account of their greater intensity. However, two of them (the half and the fourth), give the same note as the generator, the first, at one octave distance, the second at two octaves distance, consequently, they are not of much use as far as the formation of the scale is concerned; it leaves the twelfth and the seventeenth produced by the third and the fifth of the string.

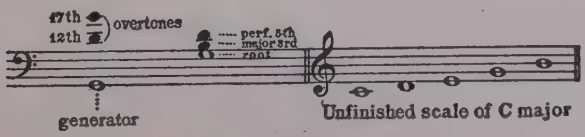


Those are compound intervals which, when reduced to simple ones (as explained previously) give the perfect fifth *g* and the major third *e*. These two notes combined with the generator C (called also the *root* of the chord), when played simultaneously, form what is called a *triad;* in this case it is a major triad because the third is major. This triad already contributes three notes to the scale: c, e, g.

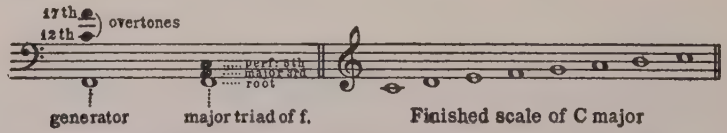


To complete the scale, other triads have to be built according to the same principle, with the specific condition that each triad will contain one note in common with the initial triad *c, e, g,* in order to establish a connecting link between them.

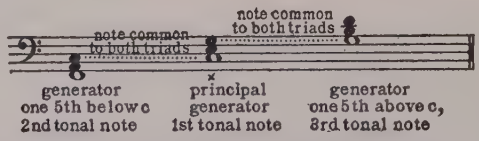
Consequently, taking as generator *g*, the fifth of the major triad of C, we find that its twelfth and seventeenth, when reduced to simple intervals, make the perfect fifth, *d* and the major third, *b;* these two notes, combined with *g* (root) form the major triad *g-b-d*, thus adding two more notes to the scale of C which, so far is: c-d-e-g-b.



Of the three notes forming the initial triad of C, two have been used as generators, the root (*c*) and the fifth (*g*). The third (*e*) cannot be used as a generator because its major seventeenth (major third) would be g♯ which would clash with the *g* natural already in the scale; neither could the fifth (*g*) be taken as the major seventeenth (major third) of a generator found seventeen notes below, because the latter would be an *e*♭ which would clash with the *e* natural of the unfinished scale. To solve the problem, the root *c* was taken and considered as the perfect twelfth of a generator found twelve notes below, this note being *f;* now *f* is the root of the triad looked for and which will complete our scale. The major seventeenth of *f* is *a* and its perfect twelfth is *c* when reduced to simple intervals, these make a major third and a perfect fifth which, combined with the generator *f*, form the major triad f-a-c, thus adding to the scale of C its last three notes.

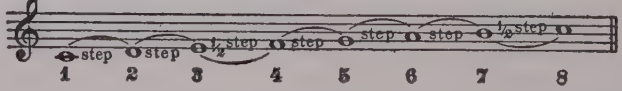


Consequently the above scale of C is formed by putting together, in their natural order, the notes belonging to the triads built upon the three following generators: C, F, G, occupying the 1st, 4th and 5th degrees of the scale. Owing to this fact these degrees are called *tonal* notes because they are the founders of the *tonality* of C.



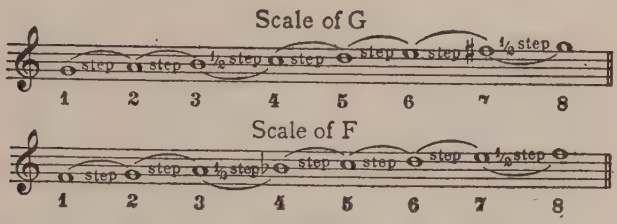
In examining with attention the following scale of *C*, one may notice that its eight notes present themselves according to the following pattern: *two whole steps, one half, three whole and one half.*

Scale of C



The above scale contains five whole steps and two half-steps, the latter being found between the 3rd and 4th, and 7th and 8th degrees, and it is this fact which characterizes this scale as being *major.*

This pattern is followed in the formation of all the other major scales, and as long as a scale can be started on any note, it is in order to preserve this pattern that, at times, sharps or flats have to be used. These alterations are nevertheless *diatonic* notes because they belong by right to those scales or tonalities. We will see later that a note introduced in a composition and *not belonging* to its signature, is a chromatic note or accidental.



NAMES OF THE DEGREES OF THE SCALE

Each degree or note of a scale has been given a special name in accordance to the place it occupies or the rôle it plays in the tonality. Those names are as follows:

The first is the *tonic.*
The second is the *supertonic.*
The third is the *mediant.*
The fourth is the *subdominant.*
The fifth is the *dominant.*
The sixth is the *superdominant* or *submediant.*
The seventh is the *leading-note* and, at times *subtonic.*

The *first* degree is called *tonic* because it gives its name to the *tonality;* it is the initial generator of the scale and therefore the first *tonal note.*

The *second* degree is called *supertonic* because it is above the tonic from which it is always separated by a *whole step.*

The *third* degree is called *mediant* because it is midway between the *tonic* and the *dominant* and, when joined to those two degrees, completes the *tonic triad* built upon the principal generator.

The *fourth* degree is called *subdominant* because, when inverted downward it lies at the distance of a *perfect fifth* (three and a half steps) *below* the tonic, in opposition to the *dominant* (fifth degree) which lies a *perfect fifth above* the tonic.

In Europe, the fourth degree owes its name of *subdominant* to the fact that it is directly under the dominant.

The subdominant being the generator of one of the three triads which engendered the scale is a tonal note; the two others are the tonic and the dominant. The interval that separates a subdominant from its lower tonic is *invariably* a perfect fourth (two and one-half steps).

The *fifth* degree is called *dominant* because it plays a very prominent rôle in the tonality owing to a chord built upon it and which is of the greatest importance.

The interval which separates a dominant from its lower tonic is invariably a perfect fifth (three and one-half steps) and this is the reason why in America the name of *dominant* is given to this degree in opposition to the *subdominant* which lies a *perfect fifth below* the tonic.

The dominant being the generator of one of the triads which engendered the scale is a tonal note.

The *sixth* degree is called, in America, *submediant* because it is midway between the *tonic* and the *subdominant* in the descending scale in opposition to the *mediant* (third degree) which is midway between the tonic and the dominant (fifth degree) in the ascending scale. In Europe, the sixth degree is called *superdominant* because it is directly above the dominant.

The *seventh* degree is called leading-note because of its attraction toward the tonic to which it leads irresistibly when played in scale form or when it is part of a certain chord built upon the dominant, which chord we will study later. Still, when the leading-note belongs to a melodic phrase, its attraction toward the tonic is not especially pronounced.

The interval separating a leading-note from its tonic is *invariably* a *half-step*.

We shall see later that in a certain form of minor scale called either *natural* or Aeolian, the seventh degree is at the distance of a *whole step* from its tonic; in that case the degree in question is *not* a *leading-note*, its tendency being to go down, away from the tonic rather than go up to it.

When in such a state, the seventh degree is called *subtonic*.

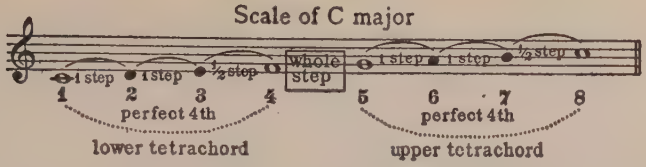
Scale of C major	Scale of G major	Scale of F major
c.....tonic	g.....tonic	f.....tonic
d.....supertonic	a.....supertonic	g.....supertonic
e.....mediant	b.....mediant	a.....mediant
f.....subdominant	c.....subdominant	b♭.....subdominant
g.....dominant	d.....dominant	c.....dominant
a.....submediant	e.....submediant	d.....submediant
b.....leading-note	f♯.....leading-note	e.....leading-note
c.....upper tonic	g.....upper tonic	f.....upper tonic

TETRACHORDS

A *tetrachord* is a series of four consecutive notes containing two steps and a half; therefore, a scale, being composed of eight notes, contains two tetrachords.

The lower tetrachord starts on the *tonic* and ends on the *subdominant*; it comprises the first, second, third and fourth degrees of the scale thus covering a perfect fourth (two and one-half steps).

The *upper tetrachord* starts on the *dominant* and ends on the *upper tonic;* it comprises the fifth, sixth, seventh and eighth degrees and, like the lower tetrachord, also covers a perfect fourth. Those two tetrachords are separated from each other by the whole step which exists in every scale between the fourth and fifth degrees (subdominant and dominant); in *C*, those notes are *f* and *g*.



In looking attentively at the above example, one will notice that the formation of both tetrachords is exactly alike, that is, the two whole steps come first, and the half follows. As a consequence of this fact, the upper tetrachord of this scale could become the *lower* of another scale to which an upper tetrachord would have to be added in order to make the scale complete. On the other hand, the *lower* tetrachord of this scale could become the *upper* of another scale to which a *lower* tetrachord would have to be added in order to form a complete scale. In other words, the *upper half* of one scale *can become* the *lower half* of another to which an upper half would have to be added, and the *lower half* of a scale *can be turned into* the *upper half* of another scale to which a lower half would have to be joined. Thus, the 5th, 6th, 7th and 8th degrees of a scale can become the 1st, 2nd, 3rd and 4th of another scale to which they would have to add the 5th, 6th, 7th and 8th degrees in order to finish it, while the 1st, 2nd, 3rd and 4th of a scale can become the 5th, 6th, 7th and 8th of another scale to which they would have to add the 1st, 2nd, 3rd and 4th degrees.

REMARK: The above statement refers strictly to *Major Scales* which are the only ones in which the formation of the two tetrachords is exactly alike.

CHAINING OF SCALES BY THE UPPER TETRACHORD

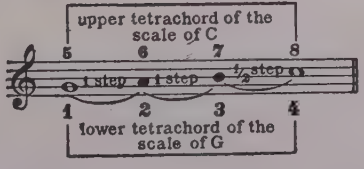
In order to apply the principle stated in the preceding chapter and chain scales together by way of the upper tetrachord one has to observe the following rules:

First—Start the new half-scale, or upper tetrachord, at a *whole step distance* from its lower tetrachord which before was the upper of the old scale.

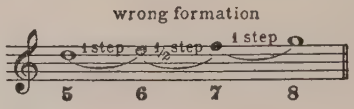
Second—Observe the order in which the notes must follow each other and which is: *two whole steps followed by a half.*

Now let us apply those rules to the scale of *C* and watch the result which will be obtained.

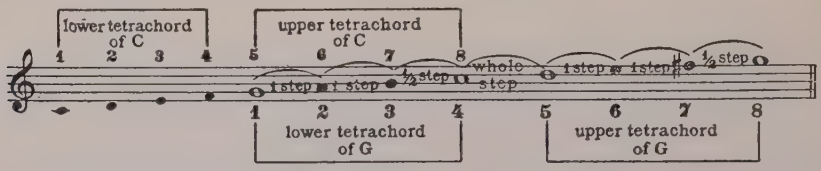
The upper tetrachord is formed by the notes: *g*, *a*, *b*, *c*, being the 5th, 6th, 7th and 8th degrees. These notes will now become the 1st, 2nd, 3rd and 4th of the new scale of which *g*, as a consequence, will be the tonic.



To this half-scale, starting a whole step above *c*, we have to add another half-scale or upper tetrachord composed of the four following notes: *d*, *e*, *f*, *g*, which will become the 5th, 6th, 7th and 8th of the new scale.



In analyzing this new half-scale, we notice that its formation is. one whole step, one half and one whole instead of two whole followed by one half; the *f* is too near the *e*, being separated from it by a half-step instead of a whole, while that same *f* is too far from *g* from which it is separated by a whole step instead of a half. To remedy the situation we *raise* the *f* by a chromatic half-step making it f♯, and in doing so we instantly set the whole thing right because now the f♯ becomes at a whole step distance from the *e*, while the interval separating it from the *g* is a half-step.



In comparing the old scale of C with the new scale of G we draw the following conclusions:

First—The two scales have one tetrachord in common; this tetrachord, formed by the notes g-a-b-c, is the upper one of the scale of C as well as the lower one of the scale of G.

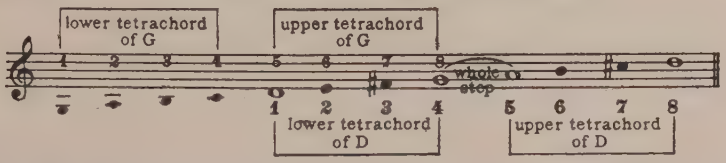
Second—The *g*, tonic of the new scale, was the dominant of the old scale of C, at the distance of a perfect fifth from its tonic.

Third—The two scales contain the same notes except for one which is *f*; the *f* is natural in C where it is the subdominant, and it is sharp in G where it falls on the leading-note.

Fourth—The result of this operation shows us why *f*♯ is the first sharp that presents itself in the upward chaining of the scales by tetrachords.

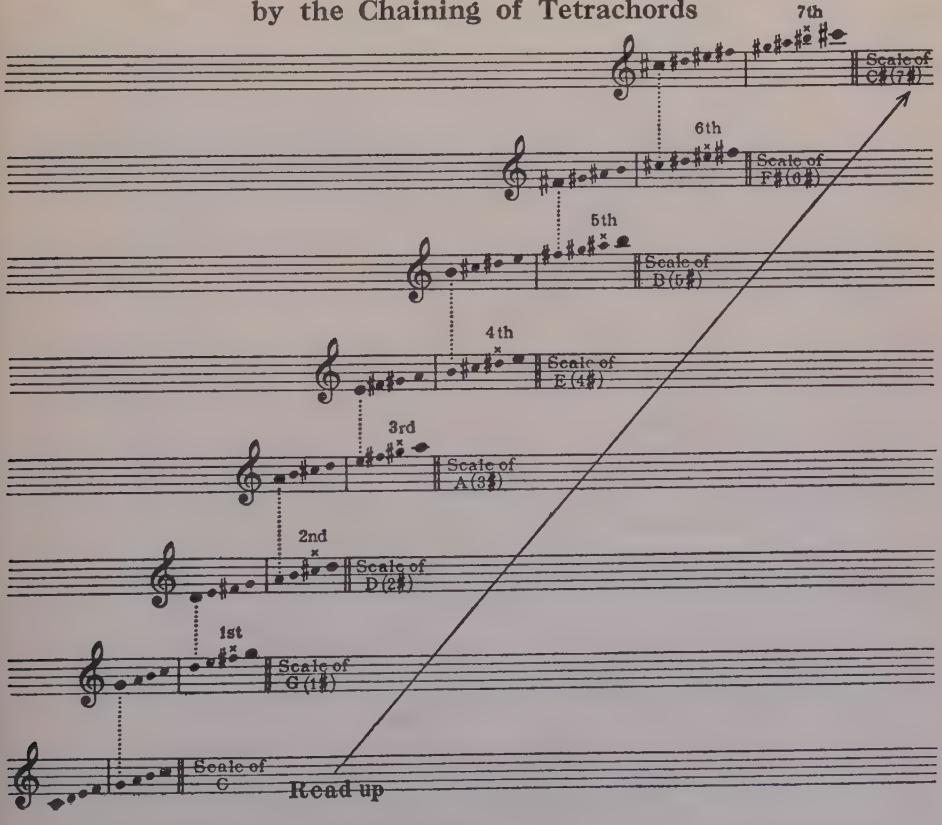
The lower tetrachord of the scale of G starts on *g*, tonic, and ends on *c*, subdominant; the upper tetrachord starts on *d*, dominant, and ends on *g*, upper tonic, these two tetrachords being separated, according to the rule, by the whole step existing between *c* and *d*, subdominant and dominant (fourth and fifth degrees). If we apply to this scale of G the same principle which we followed in the case of the scale of C, we can take its upper tetrachord *d-c-f*♯*-g* and imagine it to be the lower tetrachord of another scale whose tonic would be *d*, dominant of the scale of G and first note of its upper tetrachord. If we add to it another tetrachord started on *a* (one whole step above *g*) and built according to the regular pattern of two whole steps followed by one-half,

we find that we have to raise the *c* or else the notes would not follow each other correctly. Therefore *c*♯ is the second sharp, at the distance of a perfect fifth from the first sharp *f*♯; it falls on the leading-note of the scale of D, while in the old scale of G, the *c* was natural and was the subdominant.



If we kept on adding a tetrachord above the upper tetrachord of any major scale (with sharps) we would obtain each time a new scale having one sharp more than the preceding; its tonic would be the dominant of the previous scale and its new sharp would fall on its own leading-note; each scale would have its lower tetrachord in common with the former scale, its upper tetrachord being in common with the following scale, and the scales thus obtained would succeed each other in an ascending progression of perfect fifths, the sharps following each other also in the same progression.

Chart of the Seven Scales with Sharps Obtained by the Chaining of Tetrachords



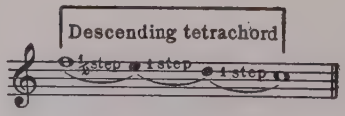
Consequently the seven sharps are: *f*, *c*, *g*, *d*, *a*, *e*, *b*. Instead of being written in front of each note that they modify, they are placed in a group at the beginning of each staff and are written exactly on the same line or in the same space as the notes which they alter, with the understanding that all the notes bearing the same name as they do should be played sharp.

As mentioned before, sharps follow each other in a progression of fifths, but it would be impossible to write them that way on the staff. To remedy this difficulty, as long as the inversion of an ascending perfect fifth is a descending perfect fourth, they alternate those intervals in order to keep all the sharps within the five lines of the staff. Thus placed, sharps form what is called *key-signature* and indicate the tonality or key in which the composition is written.

Key signatures with sharps

CHAINING OF SCALES BY THE LOWER TETRACHORD

As stated before, the lower tetrachord of a scale can be turned into the upper of another scale to which one would have to add a lower tetrachord in order to complete it. Therefore, the *1st*, *2nd*, *3rd* and *4th* degrees of a scale can become the *5th*, *6th*, *7th* and *8th* of another scale to which one would have to add the *1st*, *2nd*, *3rd* and *4th*, but as long as we are now going to chain scales downward, we might just as well mention those degrees downward too, and instead of saying 1st, 2nd, 3rd and 4th, we will begin with 4th followed by 3rd, 2nd and 1st. In looking at the example below we may notice that in this descending tetrachord, the half-step appears first, and is followed by the two whole steps, contrary to an ascending tetrachord where the two whole steps come first followed by the half.

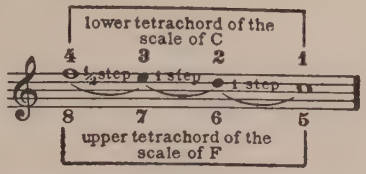


Consequently the 4th, 3rd, 2nd and 1st degrees of the old scale become the 8th, 7th, 6th and 5th of the new scale, and the half-step which existed in the old scale between the 4th and 3rd degrees becomes, in the new scale, the half-step existing between the 8th and 7th, the tonic of the former scale becoming the dominant of the new scale.

We will now finish the new scale by adding its lower tetrachord composed of its 4th, 3rd, 2nd and 1st degrees; in doing so we must be careful to *leave a whole step* between the two tetrachords and also remember that the new descending tetrachord has to begin with a half-step followed by two whole steps.

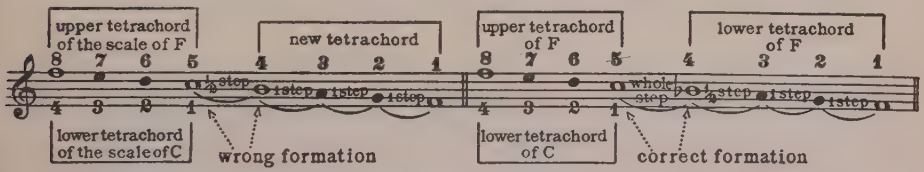
Let us again take the scale of C to which we will apply those rules. Its lower tetrachord is *f-e-d-c* (4, 3, 2, 1); we will transform it into the upper

tetrachord (8, 7, 6, 5) of another scale whose tonic will be *f* because that note is its 8th degree, upper tonic.



To complete the new scale, we have to add another tetrachord formed by the following notes: b, a, g, f, which will become 4, 3, 2, 1, but the distance between *c* and *b* is only a half-step and in order to obtain the necessary whole step between the two tetrachords, we have to lower the *b*, upper note of the new tetrachord and make it *b♭*, after which we can proceed and apply the rule concerning the formation of a descending tetrachord and which is: a half-step first followed by two whole steps; in this case, the four notes being *b♭, a, g, f.*

The scale thus obtained is the scale of F which required a *b♭* in order to be constructed according to the pattern of all major scales.



In comparing the old scale of C with the new scale of F, we draw the following conclusions:

First—The two scales have one tetrachord in common; that tetrachord, formed by the notes f-e-d-c, is the lower of C and the upper of F.

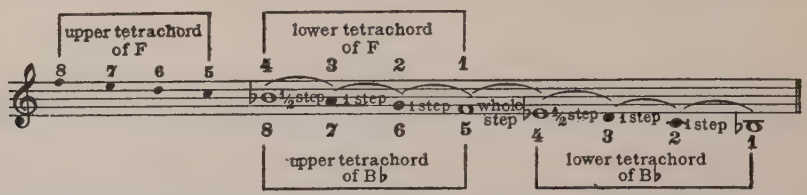
Second—The *c*, tonic of the old scale of C, has now become the dominant of the new scale of F, the tonic of both scales (*c* and *f*) being at the distance of a perfect fifth (three and one-half steps) from each other.

Third—The two scales contain the same notes except for one which is *b;* the *b* was natural in C where it was the leading-note, and it is flat in F where it falls on the subdominant, the distance between itself and its lower tonic being a perfect fourth (two and one-half steps).

Fourth—The result of this operation shows us why *b* is the first flat which presents itself in the downward chaining of the scales by tetrachords.

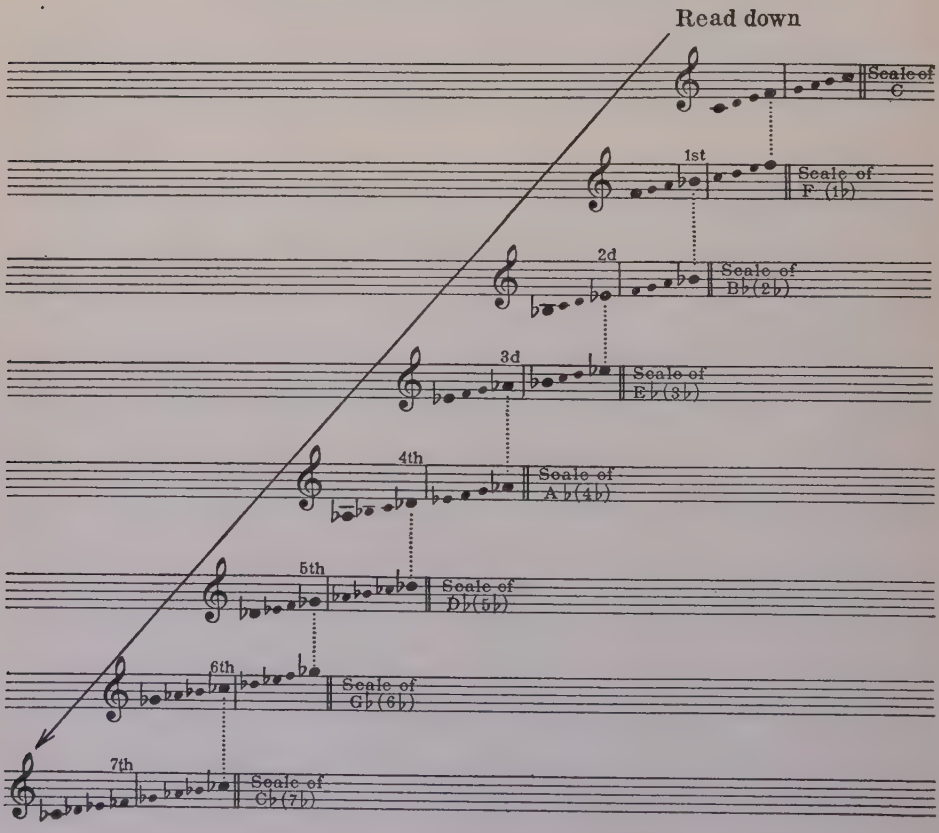
If we apply to the scale of F the same principle which we followed in the case of the scale of C, we can take its descending lower tetrachord *b♭-a-g-f* (4-3-2-1) and imagine it to be the upper tetrachord of a new scale in which b♭-a-g-f would become 8-7-6-5; consequently the scale in question would be that of B♭ because b♭ is the 8th degree, upper tonic. To finish it, we have to add another tetrachord formed by the notes e-d-c-b♭, but in order to leave a *whole step* between the two tetrachords, the *e* has to be flatted, and this is the reason why *e* is the second flat; it lies at the distance of a descending perfect fifth

from b♭, first flat, and falls on the subdominant of the scale, the distance between itself and its lower tonic *b♭*, being a perfect fourth (two and one-half steps).



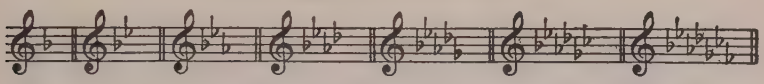
If we keep on adding another descending tetrachord to the lower tetrachord of a given scale having flats, we would obtain each time a new scale having one more flat which would always fall on the subdominant, the tonic being found a perfect fourth below. Each scale would have its upper tetrachord in common with the preceding scale having one flat less, and its lower tetrachord would be in common with the following scale having one flat more. These scales would follow each other in a descending progression of perfect fifths and the flats would also follow each other in the same progression.

Chart of the Seven Scales with Flats Obtained by the Chaining of Tetrachords



Consequently the seven flats are: *b, e, a, d, g, c, f.* Like the sharps, instead of being set in front of each note that they modify, they are placed at the beginning of each staff and in order to be able to put them all within the five lines, they are written in a succession of perfect fourths alternating with perfect fifths. Like the sharps they must be placed accurately on the same line or in the same space as the notes which they alter, and it is understood that all the notes bearing the same name as they do should be played flat Arranged in such a manner they form the *key signature* and indicate the tonality or key in which the composition is written.

Key signatures with flats



When referring to a signature, the seven sharps and the seven flats must always be mentioned or written in their right order and there is no exception to this rule. The order in which the flats present themselves is exactly the same as sharps taken backward; they meet at the *d*; *d* is the fourth sharp and is also the fourth flat.

	1	2	3	4	5	6	7
Sharps	f,	c,	g,	d,	a,	e,	b
Flats	b,	e,	a,	d,	g,	c,	f
	1	2	3	4	5	6	7

REMARK: In chaining scales *upward* by means of tetrachords, the result obtained is a scale having at its signature one *ascending alteration* more, but the latter is not always necessarily a sharp, it all depends with what scale one started. If the original scale has flats at the signature, in adding a tetrachord to the right, one obtains a scale having one *flat less;* one flat has been destroyed and transformed into a *natural* which is equivalent to an ascending alteration.

For instance, let us take the scale of B♭ having two flats at its signature; in adding a tetrachord above its own upper tetrachord, we obtain the scale of F having only one flat at its signature; the second flat (e♭) has been destroyed and transformed into *e natural*, the result being equal to an *ascending alteration.*

One could start with the scale of C♭ having seven flats at its signature and gradually work up to the scale of C having nothing at its signature after which one enters the series of sharps. The same principle applies to the scales chained *downward* by means of tetrachords; the result obtained is a scale having at its signature a *descending alteration* more, either *one more flat* or a *sharp less.* Starting with the scales having sharps and each time destroying one of them, replacing it by a natural note, it is only after the scale of C is reached that one enters the series of flats, each time one more flat being added.

RULE TO FIND THE KEY IN WHICH A COMPOSITION IS WRITTEN WHEN THERE ARE SHARPS AT THE SIGNATURE

We have seen before that in chaining scales upward by means of tetrachords, the new sharp falls always on the *leading-note* of the scale, the tonic being half a step above. Therefore, to find in what key a composition is written when there are sharps at the signature, one looks for the last sharp of the group, the name that it bears is the leading-note of the key in question and half a step above will be found the tonic or keynote of the tonality looked for.

For instance, with four sharps the piece will be in *E* because *d*♯ is the fourth sharp and is the leading-note of *E*, half a step above. With seven sharps the tonality will be *C*♯ because *b*♯ is the seventh sharp and is the leading-note of *C*♯, half a step above. Therefore:

With one sharp;	f♯	the tonality is G
With two sharps;	f♯–c♯	the tonality is D
With three sharps;	f♯–c♯–g♯	the tonality is A
With four sharps;	f♯–c♯–g♯–d♯	the tonality is E
With five sharps;	f♯–c♯–g♯–d♯–a♯	the tonality is B
With six sharps;	f♯–c♯–g♯–d♯–a♯–e♯	the tonality is F♯
With seven sharps;	f♯–c♯–g♯–d♯–a♯–e♯–b♯	the tonality is C♯

On the other hand, to find how many sharps there are at the signature of a given tonality, the following rule is to be applied: It is understood that the last sharp at the signature is the leading-note. Therefore, the first thing to do is to find the leading-note of the given tonality and we know it is always half a step below the tonic. The next thing to do is to count the sharps in their normal order and stop on the one bearing the name of the leading-note in question, the number thus obtained indicates the number of sharps at the signature of the given tonality.

Suppose we want to find the number of sharps at the signature of the tonality of *B*. First, we will look for the leading-note which is a♯, half a step below b, tonic. We will then count the sharps until we reach *a*: f, c, g, d, a; *a* is the fifth sharp, consequently there are five sharps at the signature of B. In *A* there are three sharps because its leading-note is g♯ and g♯ is the third sharp. In C♯ there are seven sharps because its leading-note is *b*♯ and b♯ is the seventh sharp, etc.

RULE TO FIND THE KEY IN WHICH A COMPOSITION IS WRITTEN WHEN THERE ARE FLATS AT THE SIGNATURE

In one of the preceding chapters, we have learned that, in chaining scales downward by means of tetrachords, the new flat always falls on the subdominant of the scale owing to the fact that the upper note of the added tetrachord

had to be lowered in order to obtain a whole step between the two tetrachords, therefore, the subdominant is always at the distance of a descending tetrachord or perfect fourth from its lower tonic. Consequently, to find in which key a composition is written when there are flats at the signature, one should *go down* a perfect fourth (one half and two whole steps) on the last flat and the note reached is the tonic of the tonality looked for.

For instance, let us find out what is the key having four flats at the signature. The first four flats are: b, e, a, d; d♭ is the fourth; on it we go down a half-step (d♭ to c), them a whole step (c to b♭) and another whole step (b♭ to a♭); consequently A♭ is the tonality having four flats. With six flats, the tonality is G♭ because the sixth flat is *c♭* and one half and two whole steps below is g♭, tonic. With three flats, the tonality is E♭ because the third flat is a♭ and one half and two whole steps below is *e♭*, tonic.

On the other hand, to find the number of flats at the signature of a given key, the rule stated above must be reversed. We know that the subdominant is the last flat at the signature and that it always lies at the distance of an *ascending* perfect fourth (two and one-half steps) from its tonic. Consequently, the first thing to do is to find this particular subdominant by *going up* a perfect fourth on the tonic of the key mentioned; when this subdominant has been obtained, one counts the flats in their natural order until the flat is reached that bears the name of the said subdominant; the number thus covered indicates the number of flats at the signature of the given key.

Now let us find how many flats there are in the key of D♭. On d♭, tonic, we go up a perfect fourth which, when analyzed is: a whole step (d♭ to e♭) another whole step (e♭ to f) then a half-step (f to g♭). Therefore g♭ is the subdominant of the key of D♭ and at the same time the last flat at the signature. We then count the flats until we reach g♭; b, e, a, d, g; g♭ being the fifth flat, there are five flats at the signature of D♭. There are seven flats at the signature of C♭ because its subdominant is f♭, and f♭ is the seventh flat.

The above rule is the theoretical one, but there is a quicker way to obtain the name of the key having flats at the signature. This is by looking for the *flat before the last* in the group set at the signature and that note is the tonic. For instance, with four flats (b, e, a, d) a♭, third flat is the tonic; with six flats (b, e, a, d, g, c) g♭, fifth flat is the tonic. With three flats (b, e, a), b♭, second flat, is the tonic.

The only time this little scheme (which has a scientific basis) does not work, is when it comes to the key having only *one* flat and which is F. In this case, one has just to remember that it is the only one, in the series of tonalities with flats whose tonic is a natural note—the tonic of all the others being flatted notes.

On the other hand, to find the number of flats at the signature of a given key, one should count the flats in their natural order until reaching the one bearing the name of the given key and *add one more* to the number covered.

For instance, B♭ (*1st flat*) is the tonic of the key having *2 flats;* E♭ (*2nd flat*) is the tonic of the key having *3 flats;* G♭ (*5th flat*) is the tonic of the key having *6 flats* and so forth.

TONALITIES HAVING MORE THAN SEVEN ALTERATIONS AT THEIR SIGNATURE

The normal number of sharps or flats at the signature of tonalities in general use is limited to seven, but theoretically there are tonalities having a larger number of alterations. Those abnormal tonalities are obtained by raising or lowering, by a chromatic half-step, every note belonging to the normal scale. This operation, naturally, brings double-sharps and double-flats which increase the number of alterations at the signature.

Let us take for example the scale of G major which has one sharp. If we raise every note by a chromatic half-step, we obtain the scale (or tonality) of G♯ major having *eight sharps* because the seven notes are now sharped and the *f*, which was a sharp already, has become a *double-sharp* which makes one extra, in other words: 7+ 1=8. The scale of E major has *four sharps*, consequently, the scale of E♯ major will have *seven sharps* plus *four* double-sharps making *eleven* altogether.

The same principle applies to scales having flats. If we lower the keynote by a chromatic half-step, all the other notes must follow suit; all the natural notes become flats, and those which already were flats, become double-flats. Ex: The scale of *F major* has *one flat*, consequently the scale of *F♭ major* will have *seven flats* plus *one* double-flat, which makes eight flats altogether. The scale of *E♭ major* has *three flats*, therefore the scale of E♭♭ major will have seven flats plus *three double-flats* making *ten* altogether. Such key-signatures are never used either in scales or as tonalities in which to write a composition; yet, at times, they are unavoidably brought about in the course of a piece of music through modulations, but when it so happens, the composer leaves those unfamiliar shores as soon as possible using enharmony as a means of coming back to better known lands.

In a later chapter entitled: "Enharmonic Tonalities" this subject will be explained in more detail and with examples which will make it clearer to the mind of the student.

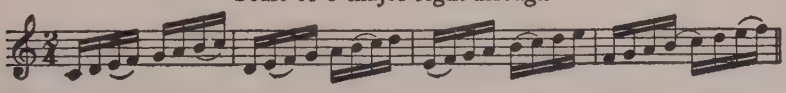
MODES

The *mode* of a scale is the manner in which that scale is constructed in reference to the order in which the steps and half-steps follow each other. In other words, the mode is determined by the position of the half-steps.

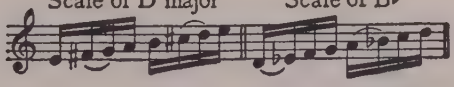
In modern music there are two modes: *major* and *minor*. As mentioned before, in the *major mode*, there are two half-steps which are found between the third and fourth and seventh and eighth degrees of the scale; this fact characterizes the scale as being major.

A scale does not need to always begin on its tonic, far from it. It may begin on any degree and end on a different note than the one on which it started in spite of which fact the series in question will always belong to the given signature if the half-steps are between the same notes.

Scale of C major right through



Scale of D major Scale of B♭

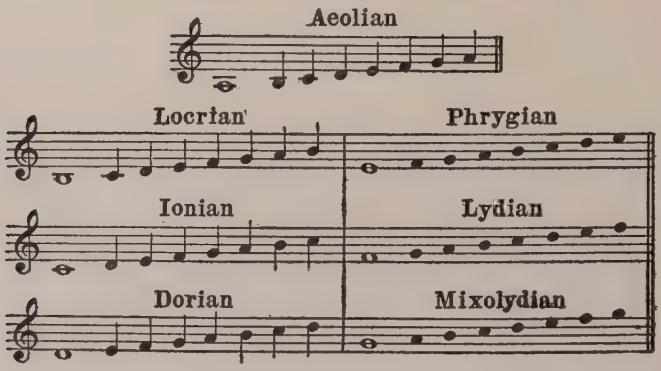


The first of the above examples is in C major because right through the four measures, the half-steps are between *e–f* and b–c and C major is the only scale having half-steps between those notes. The second example is the scale of D started on its supertonic *e*, the half-steps being between f♯–g and c♯–d and D major is the only scale having its half-steps between those notes. The third example is the scale of B♭ started on its mediant *d*, the half-steps being between d–e♭ and a–b♭ and B♭ major is the only scale having half-steps between those notes.

In the *minor mode*, it is again the position of the half-steps which indicates that the scale is minor, the half-steps occupying an altogether different place in the scale than they do in major as we will see in the next Chapter.

No doubt, it would be interesting for the student to know that in Antiquity, as well as in the Middle Ages, scales were not built according to one pattern as they are to-day; in fact, there was just one scale, that of A minor, but in order to obtain some variety, they used every degree as a tonic on which a series of eight notes was built and each series was a mode in itself, although each time, the half-steps were between *b* and *c*, and *e* and *f*, just the same. When the series was from A to A, it was the Aeolian Mode from B to B, it was the

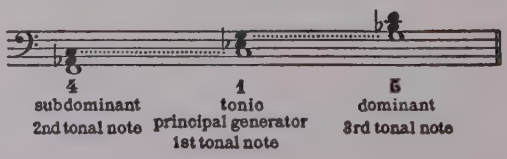
Locrian Mode, from C to C (our present fundamental scale) it was the Ionian Mode, etc.

Greek or Church Modes

Church Chants were written strictly within the compass of just one octave. For instance, if a hymn was in the Lydian Mode, the voices would not go any lower than the *f* or any higher than its octave above. Owing to the construction of those scales, which now seems peculiar to us, there was no special attraction toward the tonic; in fact, musicians did not even think it was necessary to end the song on that degree.

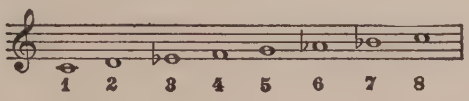
In looking at the Hymn to St. John, page, 5 at the beginning of this book, the student may realize that it was apparently written in the Ionian Mode, as it starts on a *c* and does not go further down, but it ends on *d*, leaving one in suspense, a fact which is altogether in opposition with our present day tonalities where the tonic is the only note which is absolutely satisfactory as an ending owing to the feeling of perfect repose that it gives.

MINOR SCALES

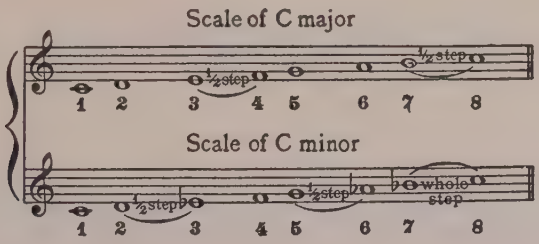
Minor scales are a modification of the major scales; they are closely connected with them because they are engendered by the *undertones* (lower harmonics) of the same generators whose *overtones* (upper harmonics) produce the major scales. These generators, called *tonal notes* are, as mentioned previously, the *first*, *fourth* and *fifth* degrees (tonic, subdominant, dominant). When artificially reversed, these generators produce minor triads composed of a *minor third* and a *perfect fifth;* consequently the minor scale of C would be engendered by the following minor triads.

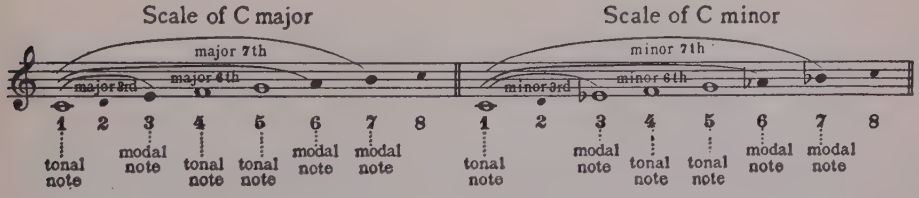


In writing those sounds in their normal succession, we obtain the following scale:



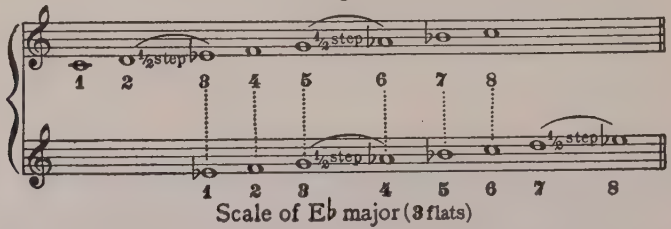
In examining this scale attentively, we notice that it contains three flats: *b–e–a* and that it differs radically from the scale of C major in the way its steps and half-steps present themselves, the two half-steps being found between the 2nd and 3rd, and 5th and 6th, while in the major scale the half-steps were between the 3rd and 4th, and 7th and 8th. We notice too that the 7th degree is at the distance of a whole step from the tonic, which fact deprives that degree from its characteristic quality of leading-note.



The tonal notes are *c, f, g* (1–4–5); they are the same as in C major but the 3rd, 6th and 7th are altogether different; in this new scale, those notes are flatted and when joined to the tonic (c) form minor intervals (minor third, minor sixth and minor seventh) while in C major, those notes are natural, and with the tonic (c) form major intervals (major third, major sixth, major seventh). Consequently, these notes, according to the state they are in, determine the mode of the scale and owing to that fact, they are called *modal notes.*

In looking at these two scales, we draw the conclusion that C major and C minor, although connected by their tonal notes, are totally different as far as their signature is concerned. C major has nothing at its signature, while C minor has three flats and is just like the scale of E♭ major started on its

6th degree. In such a form, a minor scale is called (in America) either Aeolian (from the old Greek appellation) or Natural which means that it is played exactly according to the signature without the introduction of any accidental. In Latin countries, France, Belgium, Italy, etc., that type of minor is called Antique, because in Antiquity and for many centuries after, it was the only one in use. Nearly all the Gregorian Chants are written in Antique minor, which at the time was called *Aeolian Mode*. In Russian compositions, this form of minor is used quite frequently always very effectively and seems to be a strong characteristic of Slav music.

Scale of C minor Antique or Natural (3 flats)

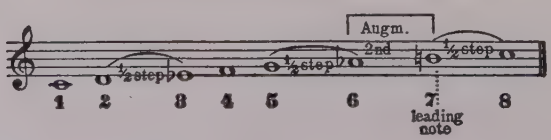


The peculiarity of the Natural minor scale is its lack of leading-note; the 7th degree, being at the distance of a whole step from it tonic, has absolutely no affinity for it, in fact, its tendency is to go down and resolve on the 6th degree (submediant) rather than go up. In such a state, the 7th degree is called *subtonic*.

But from an harmonic standpoint, the natural minor scale is unsatisfactory as its chord possibilities are very limited owing to the lack of a leading-note, so, in order to obtain one, the 7th degree (subtonic) is raised by a chromatic half-step; in this particular case it is the *b*♭ which becomes *b*♮.

The result of that alteration is, that now, the 7th degree (b♮) lies at the distance of a half-step below its tonic (c) and so, instantly, becomes a leading-note. When thus constructed, a minor scale is called *harmonic*.

Scale of C minor Harmonic form (3 flats)

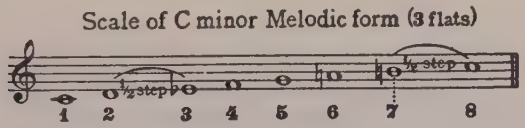


In looking closely at the above scale, we notice that it contains three half-steps, the first, between 2–3 (d to e♭) the second between 5–6 (g–a♭) the third between 7–8 (b♮–c). We notice also that an unusually large interval separates the 6th from the 7th degrees (a♭ to b♮) which interval contains a

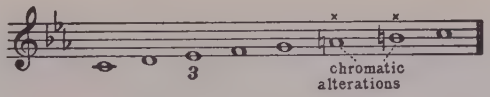
whole step plus a chromatic half-step; it is an *augmented second* which is characteristic of all harmonic minor scales where it is always found between the 6th and 7th degrees (submediant and leading-note). This form of minor is generally adopted in Harmony and is the one referred to when speaking of a minor scale or tonality.

Still, although satisfactory from an harmonic standpoint, this form of minor is not satisfactory for melodic purposes; the interval of augmented second is a pronounced discord rather difficult to sing. Therefore, in order to avoid it, a license has been agreed upon which permits the raising of the 6th degree (a♭) as well as of the 7th (b♭) by a chromatic half-step, making them a♮ and b♮. In doing so, the half-step which previously existed between 5th and 6th, disappears and in its place there is a whole-step (g to a♮). So, from the 3rd to the 7th degrees, all the notes are separated from each other by a whole-step, the two half-steps being found between 2nd and 3rd (d to e♭) and 7th and 8th (b♮ to c).

When so constructed, a minor scale is called "*melodic.*"

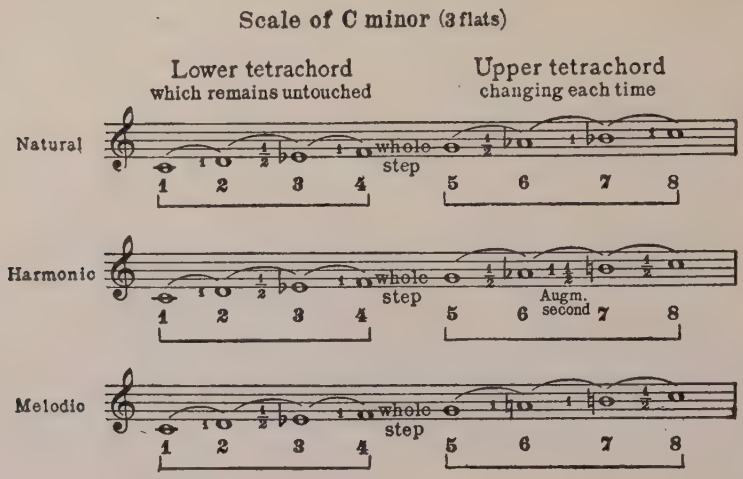


One may notice that, in the harmonic minor scale, the 7th degree, which by right is a modal note, loses its role by being raised; the same happens in the melodic scale, to the 6th degree, also a modal note. At the signature, those two notes remain untouched because the alterations which raise them are purely chromatic and total strangers to that musical family.

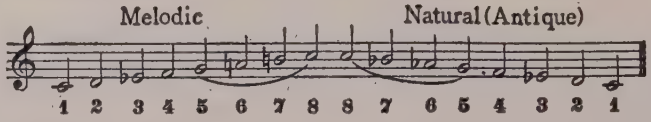


Two modal notes having been destroyed, it leaves only one, the mediant (3rd degree); this is the *only one* which can be relied upon; if it forms a *minor third with its tonic*, there is absolutely no doubt that that scale is minor, notwithstanding the order of the steps and half-steps in which the upper notes of the scale present themselves.

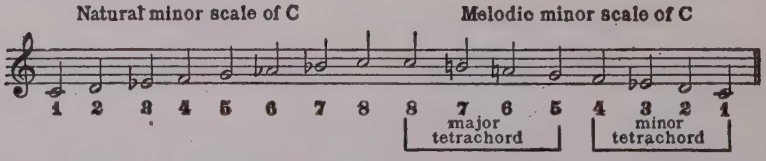
Therefore, the pattern of the lower tetrachord of a minor scale is without exception, *one whole step, one half, one whole*; it is the upper tetrachord which changes according to the form used.



In minor scales played on instruments, it is customary when using the melodic form ascending, to use the natural (Antique) form descending.

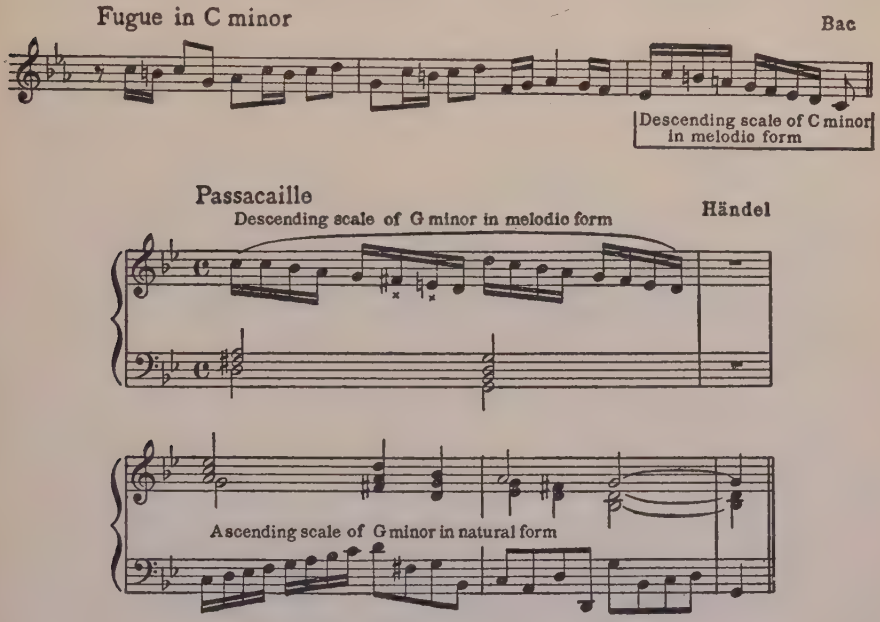


Such a custom gives the student the impression that those two forms should always be combined, but it is just a matter of choice and not a law; one may use either type, natural, harmonic or melodic to ascend or descend. Of course, the writer admits that the generally adopted combination illustrated above appeals decidedly more to our musical instinct; the subtonic of the natural minor scale having a strong tendency to go down, renders the descent perfectly smooth and apparently normal, but such masters as Bach, Händel and many others often used the *melodic form* in *descending* as well as the natural form (Antique) in *ascending*.



Such a descent as illustrated in the above example is not very pleasing because the upper tetrachord of a melodic minor scale is a major tetrachord which, when taken in a descending form, begins with a half-step followed by two whole steps; in playing the scale downward, one expects the lower tetrachord to be major also and made up in this particular case of the notes *f–e♮–d–c*. The impression given by the sudden appearance of f–e♭–d–c, minor tetrachord

(one whole–one half–one whole) is rather startling, it does not seem to actually belong there. Still, Bach used such a combination in a little Fugue in C minor; Händel did it repeatedly in a Passacaille in G minor in which he also used the natural minor in an ascending scale. It goes to show that there is no restriction where it comes to the different forms of minor, one can do what he pleases.



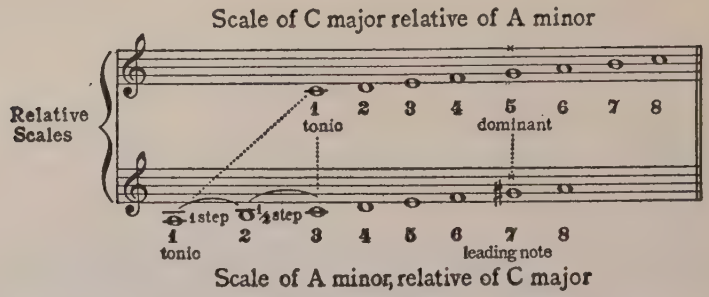
RELATIVE SCALES

In the paragraph on the natural minor scale, the writer remarked that the scale of C minor, taken at the time as an example, was exactly the scale of E♭ major started on its sixth degree (submediant), both scales having three flats at their signature.

This goes to show that a close relationship must exist between major and minor scales.

In fact, every major scale has a minor scale belonging to it, both having the *same signature* but having a *different tonic*, they are called *relative scales;* the minor is relative of the major, and the major is relative of the minor like two first cousins in a human family.

The tonic of the minor is the 6th degree (submediant) of the major and is found a minor third (a half and a whole step) *below* the tonic of the major; on the other hand the tonic of the major is the 3rd degree (mediant) of the minor and is found a minor third (a whole step followed by a half) *above* the tonic of the minor.



Both having the same signature, these relative scales are naturally made up of the same notes except for *one* which is the leading-note of the minor obtained by the chromatic raising of the subtonic (7th degree) of the *natural* minor scale.

Generally the presence of that accidental in a musical phrase denotes the minor family to which the latter belongs. Yet, the student should not take for granted that if the leading-note of the minor is not to be found, the phrase in question is irrevocably in major; far from it, because the *natural minor* form may be employed at the time and in it the 7th degree is not raised. It all depends on how the phrase ends and what chords are used.

More information on this subject will be given in the chapter entitled: "Rule to determine whether a composition is written in major or in its relative minor."

Chart of the Major and Minor

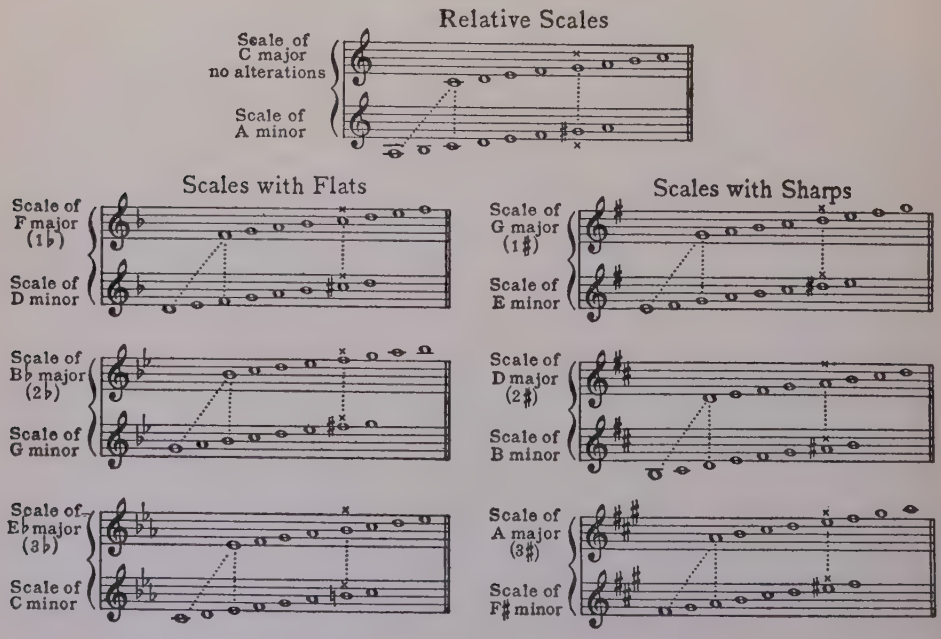
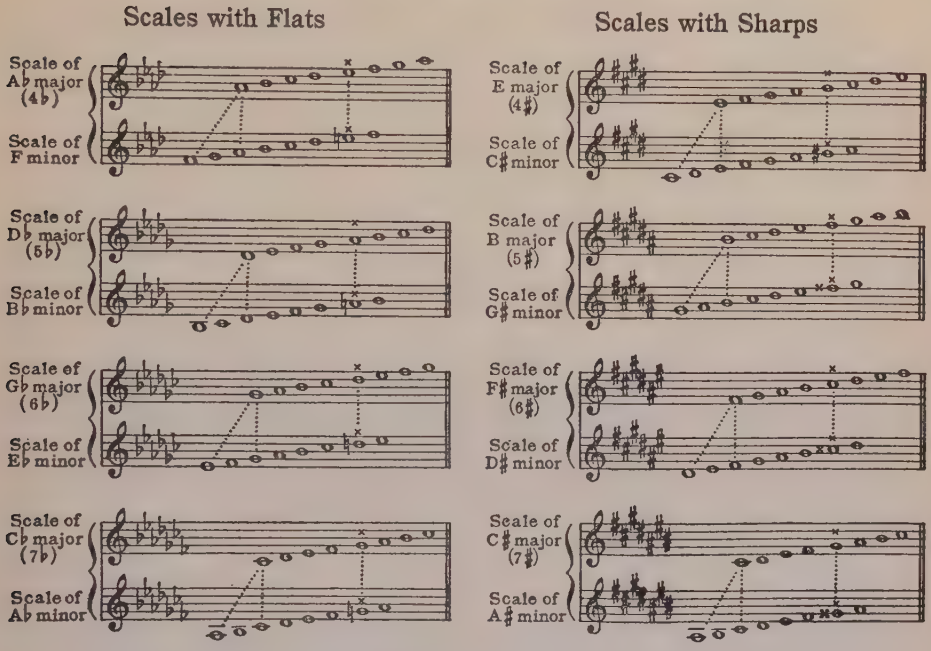


Chart of the Major and Minor—(*Continued*)



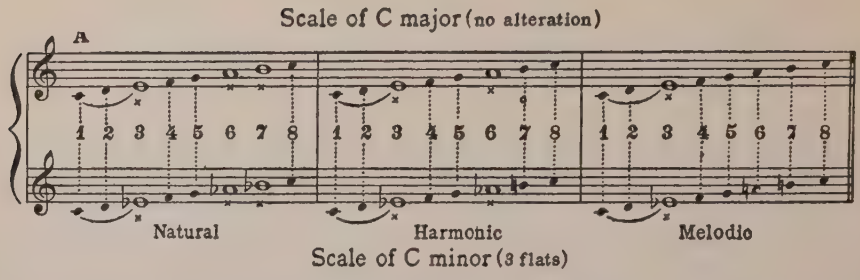
CORRESPONDING SCALES

At the beginning of the chapter on Minor Scales, we saw that in lowering the 3rd, 6th and 7th degrees (modal notes) of the scale of C *major*, we obtained the scale of *C minor* Antique or Natural.

We realized then that those scales were in no way related so far as their signatures were concerned, one having nothing at its signature, the other having three flats, but we saw that they *corresponded* by their tonal notes c–f–g (1st, 4th and 5th degrees) which are the generators that engendered both scales, C major being formed by the *overtones* and C minor by the *undertones*.

Such scales are called, in Europe, *corresponding* scales.

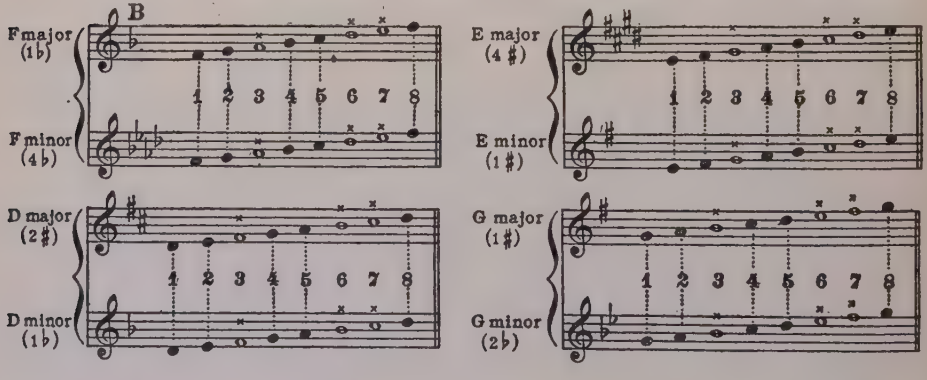
Although not belonging to the same family, those two scales of C have quite a good deal in common. Not only are their tonal notes (c–f–g) alike, but the leading-note (b♮) belongs to both, and in the melodic minor, the *a* (submediant) is natural as it is in C major, not forgetting to mention the supertonic *d* which belongs to both scales at all times, although it is not a tonal note. There is in reality only *one note* which differs radically from one other, and that is the *mediant*. This modal note *always remains faithful to its owner;* in C major, it is natural and forms with its lower tonic a *major third* (two whole steps) while in C minor the *e* is flat, no matter what type of minor is used, and forms with its lower tonic a minor third (one step and one-half).



What applies to the corresponding scales of C, applies to all corresponding scales. They *correspond* by their *tonal notes* and *differ* at the signature by their *modal notes*.

The difference which exists between their signatures is always of three alterations, the *minor* scale having *three descending alterations more* than its corresponding major, in other words, the three modal notes of the major are lowered to obtain the signature of its corresponding minor. If the major has flats, its corresponding minor has three more flats. If the major has sharps, in the minor three sharps are taken away and become natural notes. If the major has two sharps, those become natural notes and a flat is added, and if the major has only one sharp, it is taken away, and two flats are added.

Four Major Scales compared with their corresponding Natural Minor Scales



On the other hand, the major scale has always *three ascending alterations more* at its signature than its corresponding minor, that is, the three modal notes of the Natural minor scale are raised to obtain the signature of its corresponding major.

If the minor has sharps, at its signature, its corresponding major has three more sharps. If the minor has flats, three of those flats are raised and become natural notes. If the minor has two flats, those become natural notes and a sharp is added and if the minor has only one flat, that one flat is taken away and two sharps are added.

REMARK: As an illustration of this statement, the student is referred to the last example in which he should first look at the signature of the minor scale and compare it in each case with the signature of its corresponding major written right above, being sure to realize what are the *tonal notes* by which those scales *correspond*, and the *modal notes* by which they *differ*.

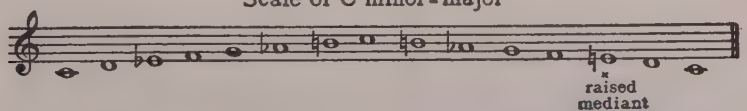
The rules just mentioned apply only to the signatures but are not followed strictly in practice owing to the fact that there are three forms of minor and in two of them, harmonic and melodic, either one or two of the modal notes are destroyed, but those chromatic alterations do not affect the signature in any way.

It goes to show that there is only one modal note on which one can depend *absolutely*, and that is the *mediant*, as stated at the beginning of this chapter. According to the sort of third it forms with its tonic, the scale or tonality is either major or minor and to that rule there is *no exception*.

The combination of corresponding tonalities is made use of a great deal and always with very effective results.

For instance, at times, when a piece is written in minor, toward the end the composer will raise the mediant thus bringing a modulation into the *corresponding major* in which he remains until the close. Such an operation gives to the listener the impression of hope and joy suddenly lifting the veil of sorrow and despair like an apotheosis. This combination is called *Minor—Major*.

Scale of C minor-major

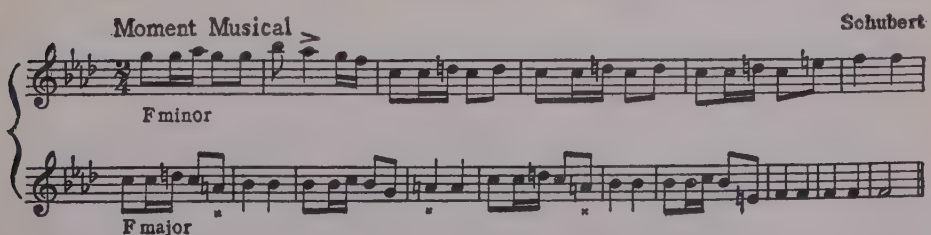


The student is referred to Beethoven's Funeral March in the Sonata Op. 26 which is a good illustration of the minor-major type.

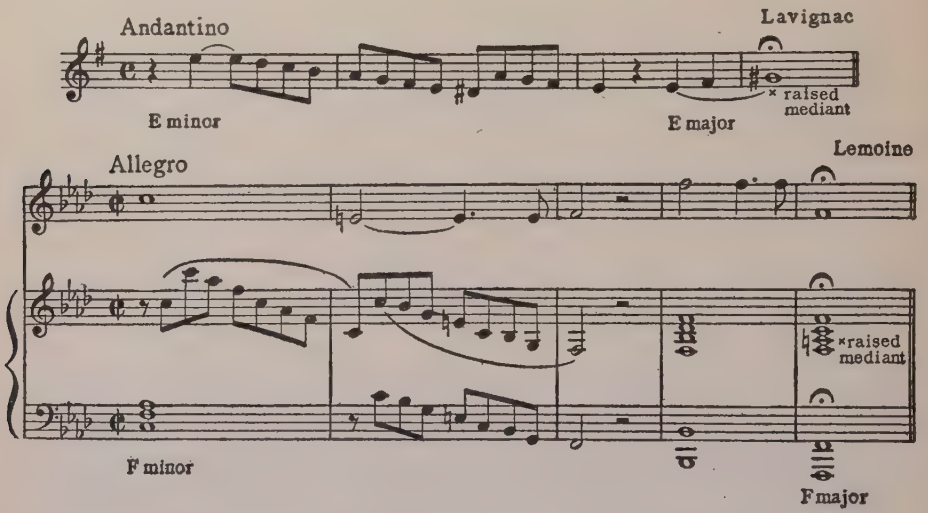
It is written in A♭ minor (seven flats) but eight measures before the end, Beethoven raises the mediant *c*♭ making it *c*♮ thus modulating to *A*♭ *major*, (four flats) corresponding tonality of *A*♭ *minor* and he remains in A♭ major until the end.

Another striking example of minor-major is Schubert's Moment Musical, an excerpt of which is given below.

It is in F minor (4 flats) but ten measures before the end, Schubert raises the mediant *a*♭, which becomes *a*♮, thus modulating to *F major*, (1 flat) corresponding tonality of *F minor*, *and the piece remains* in F major until the close.

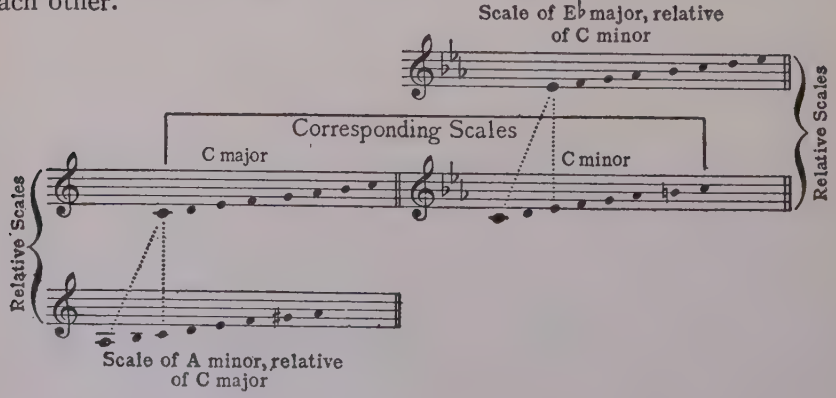


In some cases however, the mediant (3rd of the tonic triad) is raised only in the very last measure either in the melody or in the accompaniment. Such an ending was used frequently in old sacred songs as well as in classical and modern compositions.



REMARK: *Corresponding* scales or *tonalities* are *not the same* as *relative scales* or tonalities and vice-versa.

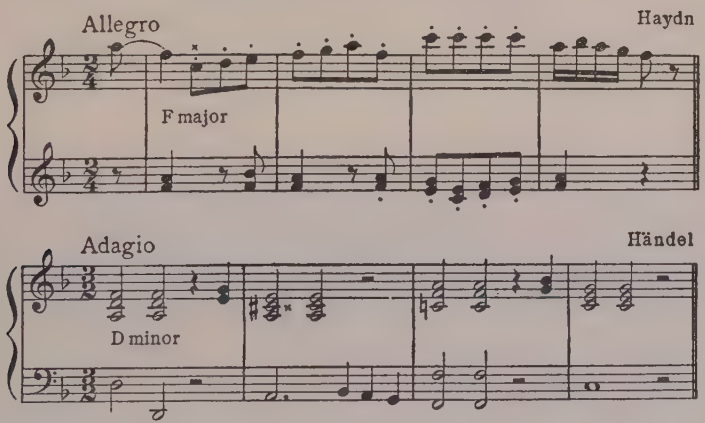
Relative scales or tonalities have the *same signature* but have *different tonics* and consequently have *different tonal* as well as *modal notes*. *Corresponding scales* or tonalities have a *different signature* but have the *same tonic* as well as the same tonal notes (1–4–5); they *differ* by their *modal notes* (3–6–7) but the *name* of those modal notes is the same in both scales. We will see later that a very *important chord* built upon the *dominant* of a major tonality belongs also to its corresponding minor, which fact renders corresponding tonalities very close to each other.



RULE TO DETERMINE WHETHER A COMPOSITION IS WRITTEN IN MAJOR OR ITS RELATIVE MINOR

As long as relative tonalities have the same signature, there is no outward sign to show in which of the two the composition is written, consequently one has to look in the composition itself for some clue as to which it belongs.

The rule that most theorists advocate is to look in the first few measures for the note which is not common to the two keys; as mentioned before, that note is the leading-note of the harmonic minor which, before it was raised, was the dominant of the major. Therefore, if at the beginning of a composition the fifth degree (dominant) of the major is found raised, it plays the role of leading-note in the relative minor, the piece being then in minor; but if the note in question is not raised, it remains the dominant of the major, the piece being then in major. Let us take for instance the tonalities having one flat at their signature; they are F major and D minor; *c* is the dominant of F major but when raised, it becomes c♯, leading-note of D minor.



The first of the given examples is in F major because the first *c* (dominant) is natural.

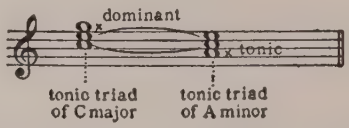
The second example is in D minor because the first *c* being sharped is the leading-note of that tonality.

This rule seldom fails when applied to piano or organ music because usually several notes are played together, and if the proof is not found in the part played by the right hand, it is soon found in the part played by the left. Besides, the final chord is always the tonic triad of either of the two tonalities in question.

But where this rule frequently fails to work is in the music written without accompaniment either for voices or instruments. In such cases, there are fewer notes in a measure and the important one looked for which is either the dominant of the major or the leading-note of the minor, may not be used for

quite some time and beside, very often, the natural minor is employed at the beginning giving the false impression that the piece is in major while in reality it is in minor. Owing to this fact, the writer suggests the following rule which, although not infallible, has less exceptions than the other.

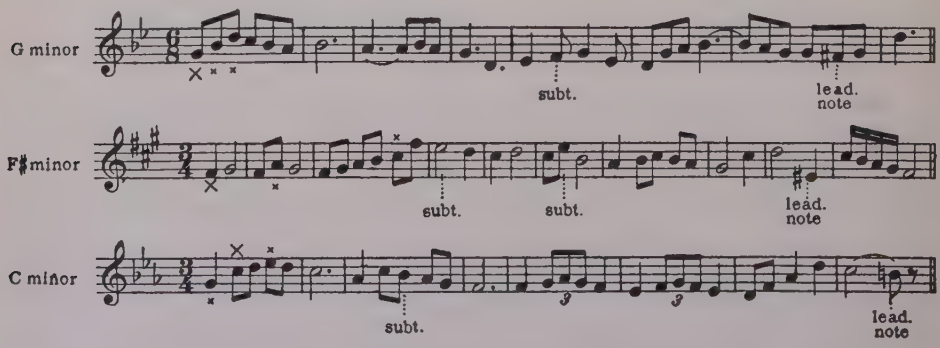
The tonic triad of a major tonality and the tonic triad of its relative minor have two notes in common; the *root* and the *third* of the *major* tonic triad becomes the *third* and *fifth* of the relative *minor* tonic triad, but the fifth of the major tonic triad (which is the dominant of the scale) *does not belong* to the tonic triad of the relative minor; on the other hand, the *root* of the *minor* tonic triad *does not belong* to the major tonic triad.



Therefore, if at the beginning of a composition, the *dominant* of *the major* tonality appears *before* the *tonic* of its *relative minor*, the piece is in major, and if the *tonic of the minor* appears *before* the *dominant* of its *relative major*, the piece is in minor.

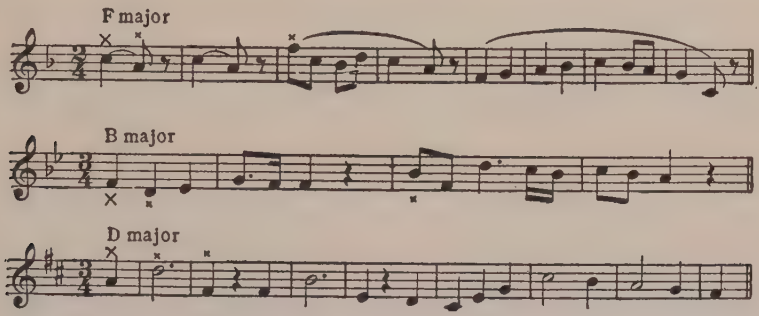
In each case, the note in question is generally preceded or followed closely by the two other notes of the tonic triad.

The student is referred to the following examples which are in minor in spite of the fact that the dominant of the major tonality is *not raised* when it first appears; nevertheless, what proves them to be in minor and *not* in major is that, in each case, the tonic of the minor is found before the dominant of the major as is indicated in the examples by a little cross set under the note in question; the two other notes of the triad (3rd and 5th) are marked also; the larger cross indicates the tonic,



The following examples illustrate the rule concerning the major; the larger cross indicates the *dominant* (fifth of the triad) which is the note playing an important role, and it is because in each instance the *dominant* of the

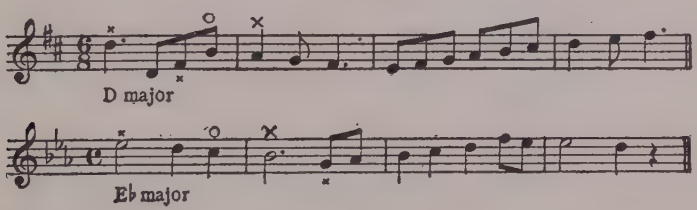
major appears *before the tonic* of the *relative* minor that those melodies are in major.



Of course, here and there, a case presents itself which at first glance seems to be in contradiction with the rule just mentioned and yet its solution can be readily obtained.

The first of the following examples is in D major notwithstanding the fact that b, tonic of the relative minor, is before *a*, dominant of the major, but an *a* follows the *b* immediately and has twice its value which fact gives it the right of priority.

The second example is in E♭ major although *c*, tonic of the relative minor appears before *b*♭, dominant of the major; but b♭ follows c immediately, having three times its value, which fact destroys any claim in favor of the minor.

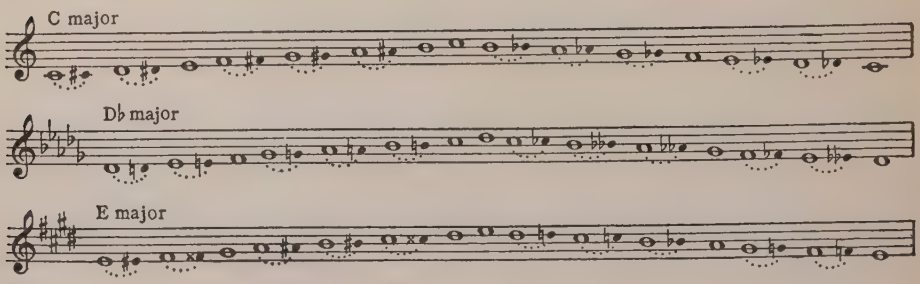


CHROMATIC SCALES

Chromatic scales are those which contain only half-steps, both chromatic and diatonic. The number of those half-steps always equals twelve, of which seven are diatonic and five are chromatic. Every major or minor scale can be transformed into a chromatic scale.

There are different ways of operating this transformation theoretically. On instruments of equal temperament, the simplest way is to insert, wherever there is a distance of a whole step, a chromatic alteration bearing the name of the *preceding* note. In an ascending scale, that alteration is ascending, that is: a flat becomes a natural, a natural a sharp, a sharp a double-sharp. In a descending scale, that chromatic alteration is descending, that is: a sharp

becomes a natural, a natural a flat, a flat a double-flat. The notes belonging to the scale must remain untouched.



ENHARMONIC SCALES AND TONALITIES

We saw in the chapter on Sounds, that Enharmony is the relation existing, on instruments of equal temperament, between several notes played on the *same key*, having the *same sound* but having *different names*.

Therefore, as long as there are enharmonic notes, there are also enharmonic scales; these scales come by sets of two, one having sharps, the other flats, both being played on the same keys and sounding exactly alike, but the names of the notes differ according to the signature of the musical family to which they belong.

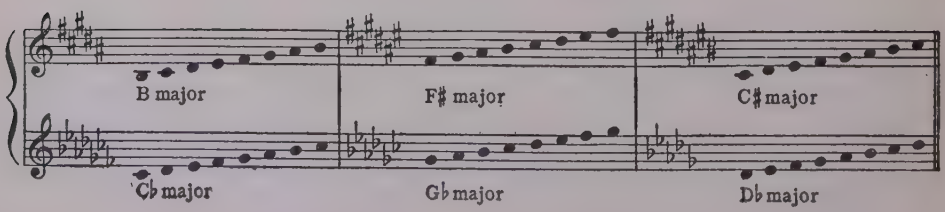
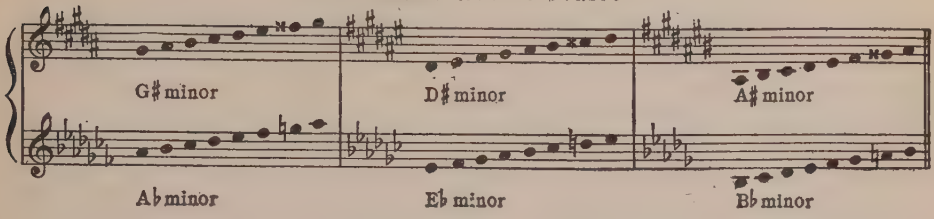
There are three sets of enharmonic major and of enharmonic minor scales. The number of alterations at the signature of both enharmonic scales, when added together, always makes number *12*.

ENHARMONIC MAJOR SCALES

B (5 sharps) and C♭ (7 flats) 5+7=12
F♯ (6 sharps) and G♭ (6 flats) 6+6=12
C♯ (7 sharps) and D♭ (5 flats) 7+5=12

ENHARMONIC MINOR SCALES

G♯ (5 sharps) and A♭ (7 flats) 5+7=12
D♯ (6 sharps) and E♭ (6 flats) 6+6=12
A♯ (7 sharps) and B♭ (5 flats) 7+5=12

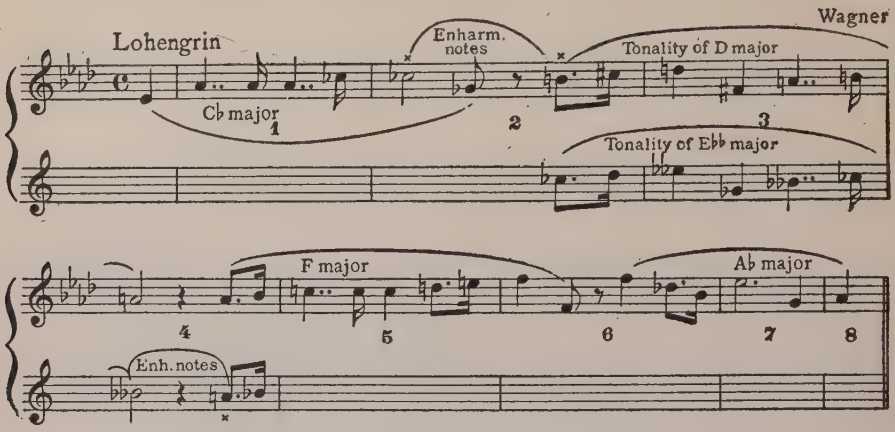
Enharmonic Major Scales

Enharmonic Minor Scales

Enharmony proves very resourceful to composers because it enables them to modulate to tonalities whose signature is quite remote from the key in which the piece is actually written. At times, these tonalities would require the use of double-sharps or double-flats which generally complicate the reading and therefore the execution, but when taken enharmonically, these tonalities remain within the ordinary limit of seven alterations at the signature.

No doubt, students have occasionally come across compositions whose signature had flats and in which one or two measures would unexpectedly contain sharps, the flats being resumed directly after, or the other way around, the signature having sharps, and one or more measures would contain flats. Perhaps the majority of students thought nothing of the fact, but those with a more analytical mind couldn't help but wonder why such a process is used and here is the explanation.

When a substitution of alterations occurs it is usually because, at the time, the composer found himself in a tight corner, having, through modulations, landed in a tonality requiring either double-sharps or double-flats which are not as acceptable to the eye as plain sharps or plain flats. Therefore, in order to simplify matters, enharmony was resorted to for the time being, thus permitting the objectional passage to be written in a harmless tonality.

A striking example of it is found in the first act of Wagner's "Lohengrin," the excerpt being given below.

The signature is that of A♭ major but Measures 1 and 2 are, through modulation, in C♭ major (7 flats); right after the eighth-rest of Measure 2, a short phrase in D major (2 sharps) begins which lasts until the quarter-rest of Measure 4, but although this phrase is *written* in D, it is actually in E♭♭ major whose signature has seven flats and three double-flats (b–e–a) and to avoid those double-flats Wagner used the enharmonic tonality of D major which has the advantage of being more familiar to the eye; the change is brought about in measure 2 by turning the c♭ into b♮.

On the last beat of Measure 4, *b♭* is resumed, the phrase being then in F major until the eighth-rest of Measure 6, and a return to the original tonality of A♭ major is being made right after.

Occasionally when the passage in question lasts for a more extended period than just a few measures, the key-signature is changed for the time being, the original one being resumed as soon as the difficulty is over, but quite often the composer doesn't think that it is necessary to do so and enharmonic notes are made use of for a period of several measures.

If this chapter happens to be read by a fairly advanced piano student, the writer suggests his taking Beethoven's "Funeral March" in the Sonata Op. 26 and analyze it.

The movement is in A♭ minor, having seven flats at the signature, consequently, to modulate further down would have meant the use of double-flats; still, with Enharmony, Beethoven was able to modulate conveniently to C♭ minor, relative of E♭♭ major, having at its signature seven flats plus three double-flats (b–e–a) and yet, to the eye, the passage in question does not look out of the way because, instead of actually writing those few measures in C♭ minor, Beethoven wrote them in B minor (two sharps) which is the enharmonic tonality of C♭ minor.

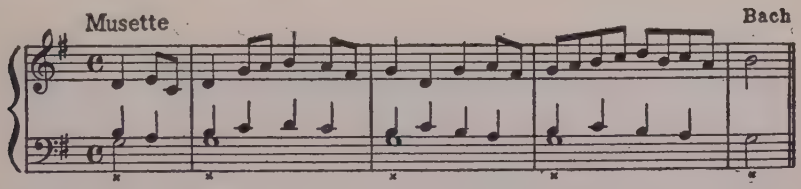
Such an operation gave him a free hand, and he continued in the said key for six measures after which he modulates to D major, relative of B minor; enharmonically, D major is E♭♭ major, relative of C♭ minor. Two measures later, the phrase is brought to an end with *d* (e♭♭), tonic, played three times in octaves. On the fourth beat of the same measure a new phrase begins with a chromatic chord containing two flats which gradually open the way back to the original tonality of A♭ minor. Later on, by raising the *c*♭, Beethoven modulates to *A*♭ *major* (corresponding tonality) in which he remains until the end. Consequently the movement in question is written in minor-major.

CONSONANCES AND DISSONANCES

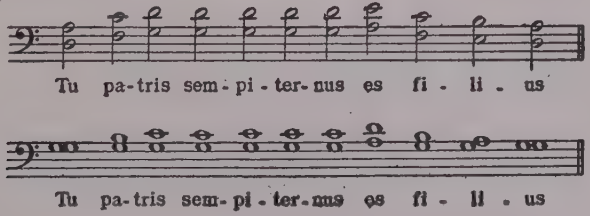
Birth of Harmony

Music, in its infancy, was confined altogether to melody, that is, to tunes sung by one or several voices in unison, and when instruments came into existence, they also produced only one note at a time. Later, the human mind began searching for some fuller means by which to express its emotions, and in so doing, it started the inevitable evolution toward greater complexity and more intricate, subtle forms.

Musicians first began to double the melody an octave higher or an octave lower, which gave about the same effect as if men and boys were singing in unison; it was termed: to *magadize*, from an ancient Greek instrument called *magadis* which had twenty strings arranged in sets of two, tuned an octave apart.

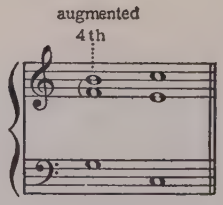
Then came the *drone-bass* or *pedal* which was a note, usually the tonic or the dominant, sounding persistently throughout the piece. The Scotch bagpipe of our day, called *musette* in France, gives a good illustration of it. Bach's "Musette" in G major being part of the Gavotte in G minor, is written on a drone-bass, the latter being *g* tonic.

It was not before the 9th Century that the first attempts at polyphonic music were made.

The new form of composition, in which several notes were sung or played simultaneously, was called *Organum*. The rules of Organum advocated the very combinations to which partisans of the conservative type of music object so much to-day, that is, the progression of parallel fourths and fifths. Those intervals are consonances when played individually, but in succession, they are very distressing, and, if we had to listen to such a cacophony as the example given here, we would have the sensation of two melodies played together, each being in a different key.



As one can notice, only perfect fifths and perfect fourths were used. The augmented fourth (*f–b*) which exists in every major scale between the 4th and 7th degrees (subdominant and leading-note) was not tolerated by the musicians of that period; the latter had such a horror of it that they nicknamed it "Diabolus in Musica" (Devil in Music) and rather than take the risk of having the detested interval sneak into their compositions by mere accident, they preferred to ignore altogether the 7th note of the scale which invited such a dissonance. It is for that reason that the scale of Guido d'Arezzo had only six notes, the *b* was left out. Still, it existed, although little used in the plainchant, especially when preceded by an *f*. The hymn to St. John which is to be found at the beginning of this treatise, is a good illustration of this statement.

If perchance a *b*, preceded by an *f*, did appear in a composition, the executant, whether a singer or instrumentalist, was supposed to flat it of his own accord, thus transforming the augmented fourth into a perfect one, not considering whether the *b*♭ harmonized or not with the notes which followed And it is the same people who gave the name of "music" to such a barbarous association of tones as the example of organum given above, who objected so strenuously to the interval of augmented fourth which in our present day is used constantly as a part of the dominant seventh chord (which we will study later). Taken by itself it is a dissonance to be sure, but combined with the other notes of the chord and resolved immediately, it gives a very satisfying sensation.



It goes to show that our conception of right or wrong in Art is all a matter of training and of the atmosphere in which we are living. Our occidental music is most distasteful to Oriental ears while Japanese and Chinese music does not especially appeal to our emotions, and, no doubt, if we had belonged to the mediæval period, we, too, would have thought that organum was the highest of perfection.

It took several centuries of slow evolution before the composers of the Middle Ages became sufficiently self-confident to discard the old prejudices and to dare attack dissonances without preparations. During that period musicians of talent had come and gone, each one adding a small or large stone to the temple of Art. Toward the middle of the 16th Century a great genius appeared in the person of Palestrina, an Italian, whose compositions made a profound and lasting impression; many of them at the present time are still

performed and much admired especially his "Stabat Mater" and several of his Masses, but even he, a master, was of the opinion that it was almost a sacrilege to attack a dissonance without having carefully prepared its entrée.

It was Claudio Monteverde, an Italian priest and musician (1567-1643) who was the first that dared to make deliberate use of unprepared dissonances, known in our day as "fundamental discords" among which, standing out very conspicuously, is the chord of dominant seventh.

Those discords made their first appearance in his opera "Orfeo and Euridice" produced in 1607 and created a profound impression, almost a revolution. Monteverde's fellow-musicians realized at once that worlds of new possibilities had been suddenly offered to them.

Such an event was of the greatest significance and had a far-reaching influence; its wonderful results were soon to be materialized as that same century marked the beginning of the Classical Period which gave to the world a Haydn, a Bach, a Handel, a Mozart, a Beethoven, and many other geniuses whose masterpieces will live forever.

At first, these dissonances, innovated by Monteverde, were used with little or no knowledge of their origin and of their law of coördination. The effect they produced was all that was looked for. Some system was sorely needed in order to leave to posterity some well defined rules by which musicians of the future could abide.

It was Jean Philippe Rameau (1685-1764) one of the glories of France, who rendered that service to the musical world. It is to him that we are indebted for the creation of the modern *science of harmony.* He published his first treatise on the subject in 1722 based on the following principle which was the result of his own discovery: "That a chord and all its inversions were one and the same."

In establishing this principle for consonances as well as for dissonances, Rameau reduced to a limited number of fundamental chords, built in thirds, the considerable number of inverted chords of which each, up to that time, had been considered as an individual entity in itself.

GENERAL INFORMATION ON THE PRINCIPAL CHORDS CONTAINED IN MAJOR AND MINOR TONALITIES

We saw in the chapter relating to scales and their relation to accoustics, that a sound, combined with its twelfth and seventeenth (5th and 3rd) and played simultaneously, forms what is called a *triad* which means a chord made up of three notes of which the generator is called the *root.*

But all triads are not alike; they are classified according to the formation of their third and fifth and are then called either: major, minor, diminished or augmented.

A triad is major when the third is major and the fifth is perfect.

A triad is minor when the third is minor and the fifth is perfect.

A triad is diminished when the third is minor and the fifth is diminished.

A triad is augmented when the third is major and the fifth is augmented.

There is an easier and quicker way to recognize the qualification of a triad as a result of the following fact: the middle note of a triad cuts the fifth in two parts, each part being a third.

Consequently a triad is made up of two thirds built one above another.

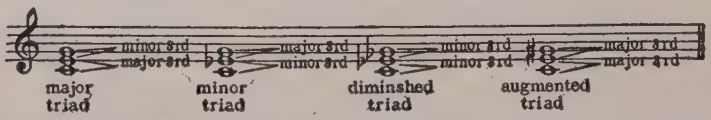
When the first third is major, the second minor, the triad is major.

When the first third is minor, the second major, the triad is minor.

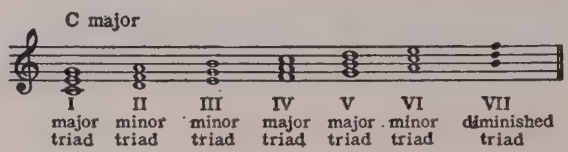
When both thirds are minor the triad is diminished.

When both thirds are major the triad is augmented.

Diminished and augmented triads are dissonances and have to be followed by a consonance in order to give to the hearer a feeling of satisfaction and of perfect repose. Such a progression is called: resolution.



Each degree of a scale, whether major or minor, can be taken as a root on which a triad can be built; degrees are indicated by Roman numerals.



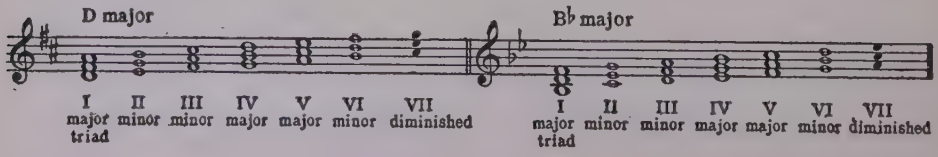
If we look attentively at the above example, we realize that those triads are not all alike in their formation.

The 1st, 4th and 5th degrees (tonic, subdominant and dominant) bear major triads. These triads, called *primary*, play a very important rôle in the tonality as they are built on the tonal notes, that is, the three generators which engendered the scale.

The 2nd, 3rd and 6th degrees (supertonic, mediant and submediant) bear minor triads which are called *secondary* as they are less important than the major triads.

The 7th degree (leading-note) bears a diminished triad which is a dissonance. Taken alone, this triad has not much individuality, but when joined to the dominant (one third below) it forms a chord of the greatest importance called "dominant seventh" which we will study later.

This analysis of the triads belonging to the scale of C major, applies to all major tonalities.



In harmonic minor scales, the degrees do not bear the same triads as they do in major.

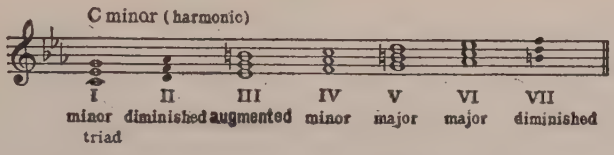
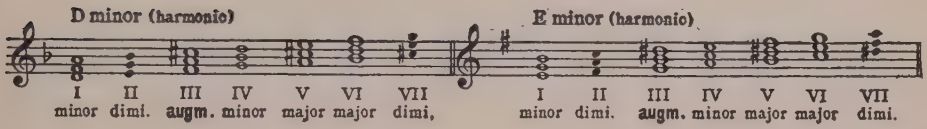
The 1st and 4th (tonic and subdominant) bear minor triads.

The 5th and 6th (dominant and submediant) bear major triads.

The 2nd and 7th (supertonic and leading-note) bear diminished triads.

The 3rd (mediant) bears an augmented triad.

Consequently all harmonic minor scales contain: two major triads, two minor, two diminished and one augmented.



INVERSIONS OF TRIADS

In the chapter on intervals, we saw that inverting an interval means to change the position of its two notes in such a way that the lower becomes the higher or the higher becomes the lower.

The same rule applies to chords as the position of their notes can be inverted also.

When the root is at the bottom, the position is called *fundamental.*

When the third is at the bottom, the position is called *1st inversion.*

When the fifth is at the bottom, the position is called *2nd inversion.*

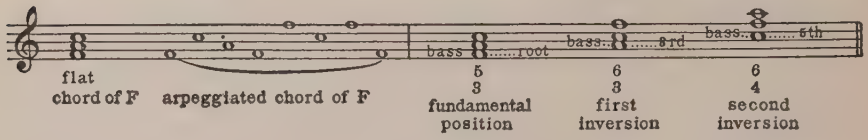
The lowest note of a chord, whether in its fundamental position or in one of its inversions, is called the *bass.* It is the *bass* that determines the *position* of a chord, notwithstanding the order in which the upper notes present themselves, the *identity* of the chord having first been determined by the *notes* which it contains.

When all the notes of a chord are played simultaneously, the form is *harmonic* being sometimes referred to as a "solid or flat" chord; and when each note is played separately, the form is melodic and is called either "broken or arpeggiated," the result being an *arpeggio.*

In Harmony, the position of a chord is expressed by numbers which indicate the intervals existing between the bass and the upper notes.

A triad, in its fundamental position, is numbered $\frac{5}{3}$ and called a five-three, chord.

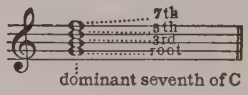
A triad, in its first inversion is numbered $\frac{6}{3}$ and called a six-three chord.
A triad, in its second inversion is numbered $\frac{6}{4}$ and called a six-four chord.



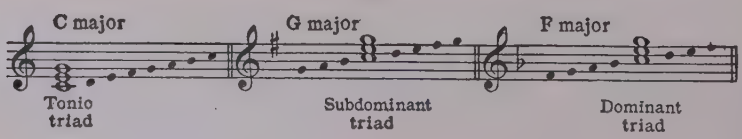
CHORDS OF SEVENTH

When another third is added to a triad, it turns it into a *chord of seventh*, called thus because the interval between the root and the upper note is a seventh; therefore, a chord of seventh is made up of three thirds, one above another. All chords of seventh are dissonances and require a resolution.

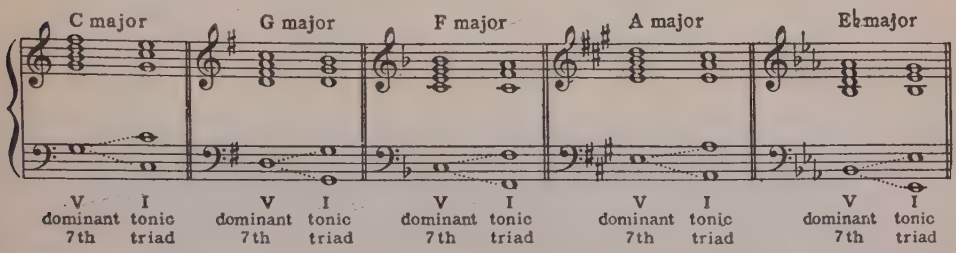
Every degree of a scale can bear a chord of seventh but, like the triads, all do not have the same importance nor are they alike in their construction. The most important is the *dominant seventh;* it is formed by a major triad above which is added a minor third, in other words, it consists of three thirds of which the first is major and the two others are minor, and it is the only chord of seventh which is built in such a way; its *root* is the *dominant*, its *third*, the leading-note, its *fifth* the *supertonic* and its *seventh* the subdominant.



The dominant seventh possesses a strong individuality and plays a very influential rôle in the tonality, more so even than the tonic triad itself, owing to the following reason: A triad, whether major or minor belongs to several tonalities; consequently, when played alone, there is no way of telling where it actually belongs, unless it is followed by other notes which then identify it as a part of this or that musical family. For instance, let us take the major triad *c–e–g*.

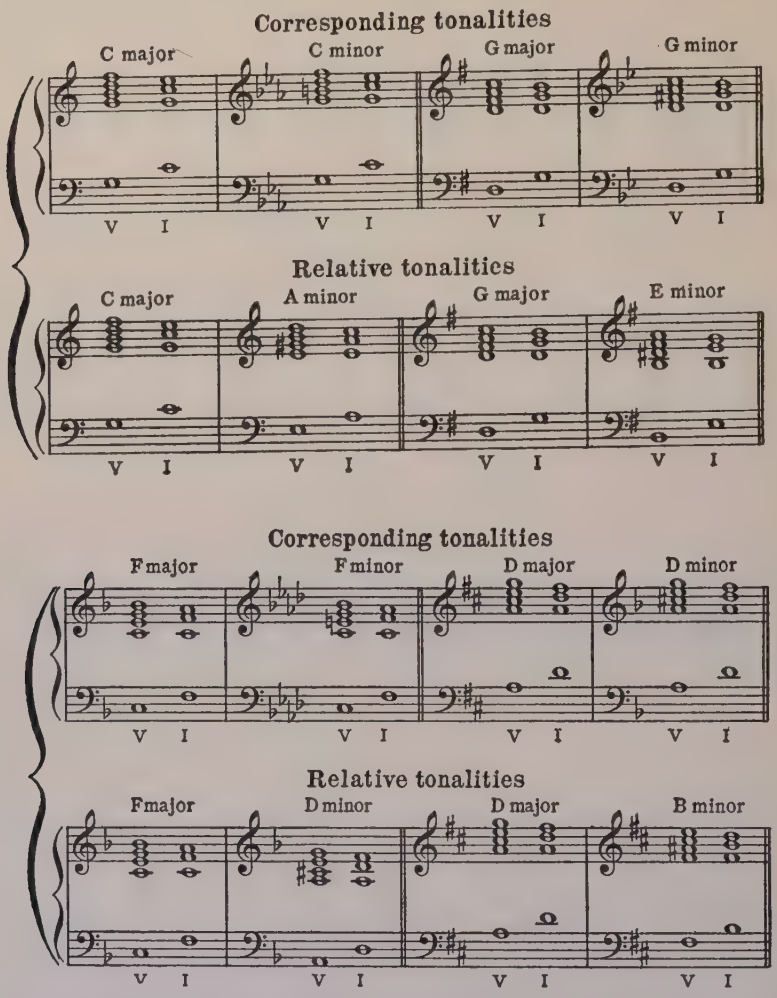
Beside being the tonic triad of C, it is the subdominant triad of G as well as the dominant triad of F. In playing the chord all by itself, one couldn't tell to which of these three tonalities it belongs definitely, but, if it is accompanied by a *b*♭, immediately it is associated with the tonality of F; if there is an f♯ in the vicinity, the chord is classified as belonging to G, and if surrounded by only natural notes, one knows then that it is a member of the C family.

The same principle applies to all other triads, whether major, minor or diminished, and also to the secondary chords of seventh because generally two or three tonalities share their ownership.

But with the dominant seventh, it is altogether a different matter because, owing to its construction, it belongs diatonically, that is, according to the signature, to just *one major tonality*, the tonic of which being found a perfect fifth below or a perfect fourth above the root of the chord. The dominant seventh is so powerful that, even when played alone, it establishes without any doubt the tonality to which it belongs. Yet, it is fundamentally a dissonance and requires a resolution which is generally made on the tonic triad toward which it has an irresistible attraction. It is only when these two chords are linked together, that they create in the mind of the hearer a feeling of absolute repose. Such a combination is called "*perfect cadence.*" It is used constantly in the course of musical compositions and especially at the close, with the object of once more establishing firmly the tonality in which that particular piece was written.



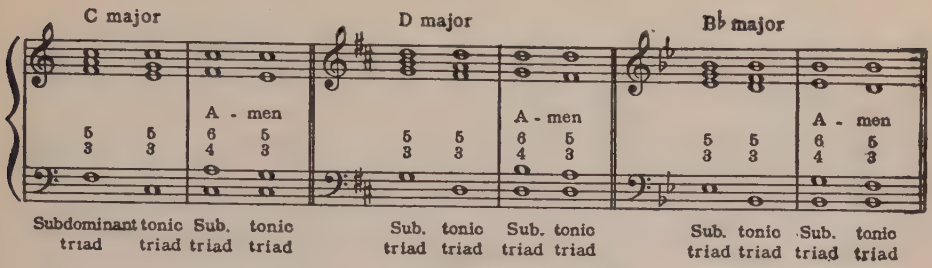
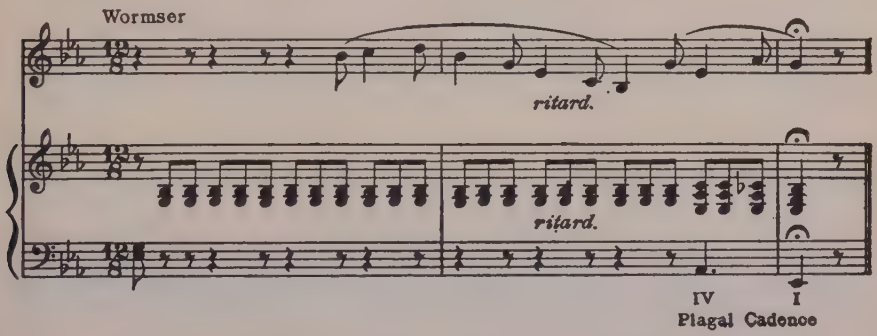
As stated above, *diatonically*, the dominant seventh belongs to *only one* major tonality, but *chromatically*, it belongs equally to the *corresponding minor tonality* of the same name which, although having a different signature, has also its tonic at the distance of a perfect fifth below or a perfect fourth above the root of the chord, like C major and C minor, D major and D minor, G major and G minor, etc. In the minor tonality, the leading-note (third of the chord) is an *accidental*, that is, a chromatic note which does not belong to the signature but all the other notes of the chord belong diatonically to both keys.

As mentioned before, it is the common ownership of the dominant seventh which makes corresponding tonalities so close to each other, a great deal more so than relative tonalities which, although possessing the same signature, have a different dominant seventh, each resolving on its own tonic triad and each possessing its own individual color. The student will realize the truth of this statement by playing several times in succession the following examples, taking first one major tonality and its *corresponding* minor and following immediately with the same major tonality and its *relative* minor written on the lower staff.



For illustrations of the frequent use that Classical Composers made of the *Perfect Cadence*, the student is referred to the chapter on Modulations which contains an analysis of the first two movements of a Sonatina by Clementi.

Before ending this chapter, the writer wishes to say a few words about another chord combination which, although not possessing the same character of finality as the perfect cadence, is endowed with a peculiar charm of its own. It is called the *Plagal Cadence* and is formed by the *tonic triad preceded* by the *subdominant triad*, the latter being either in its fundamental or an inverted position.

This chord combination is used invariably at the close of all the Hymns of the Protestant Churches, the word "Amen" being placed on it.

Yet, one should not think that the plagal cadence is confined altogether to religious purposes, far from it. It is used quite frequently in secular music, and when cleverly brought about is very effective and plays strongly on our emotions as seen below in the last few measures of a song without words by the French composer André Wormser.

INVERSIONS OF CHORDS OF SEVENTH

Like the triads, chords of seventh can be inverted by transporting the lowest note on top; every time it is done, it brings another position, and as long as chords of seventh contain four notes, they can have four positions, one fundamental and three inversions. When it is a *dominant seventh* which is inverted:

In the fundamental position, the bass is the dominant (root of the chord).

In the first inversion, the bass is the leading-note (3rd of the chord).

In the second inversion, the bass is the supertonic (5th of the chord).

In the third inversion, the bass is the subdominant (7th of the chord).

As mentioned before, in its fundamental position, a chord of seventh is made up of three thirds above one other, but as soon as it is inverted, there is an interval of second which makes its appearance and the position of the chord is determined by the place occupied by the second in question which is the result of the root of the chord being brought next to the seventh. In the dominant seventh, this second is formed by the dominant (root) brought next to the subdominant (7th) and is always a major second (one whole step).

When the second is on top, it is the first inversion.

When the second is in the center, it is the second inversion.

When the second is at the bottom, it is the third inversion.

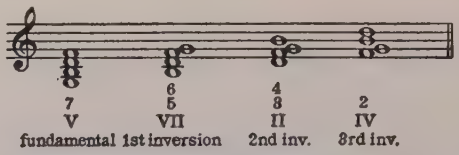
In Harmony, the different inversions of a chord of seventh are numbered according to the intervals existing between the bass and the two notes of the second.

The fundamental position is represented by 7 because from the root to the upper note there is an interval of seventh.

The first inversion is numbered $\frac{6}{5}$ because the two notes of the second (situated on top) form with the bass a fifth and a sixth.

The second inversion is numbered $\frac{4}{3}$ because the two notes of the second (situated in the center) form with the bass a third and a fourth.

The third inversion is numbered 2, meaning "second," because the second is at the bottom, its lower note being the bass.



MODULATIONS

A modulation is the result of the passing from one tonality to another in the course of a musical composition. In other words, it is a visit paid by the original tonality, for the sake of variety, to one or more friendly neighbors with which it has some notes in common, this last condition being absolutely necessary in order to render the meeting smooth and pleasant. There is no limit to the number of those little journeys; sometimes they carry the traveler to far away lands, owing to the fact that every new key visited has also its own circle of friendly neighbors, each one enticing the visitor a little farther from home, but it is understood that no matter how many modulations are effected, the absolute rule is to resume the original tonality toward the end and remain in it until the close, the perfect cadence then acting as doorkeeper locking the door after the musical family is back again, sound and safe.

There are no special restrictions permitting or forbidding certain tonalities to visit each other this being left entirely to the imagination and good taste of the composer.

Of course, it is perfectly natural for us, human beings, to feel more attracted toward people who have ideas in common with ours and also to visit our own kin in preference to perfect strangers. In music it is the same; the most natural modulations are to tonalities whose signatures differ the least from the original key or from the key visited last.

Each tonality is surrounded by six neighbors with which it has many points of contact.

If the original tonality is major, its closest neighbors are:

1. The major tonality whose tonic lies a *perfect fifth above* and (indirectly), its relative minor, both having at their signature one sharp more or one flat less.

2. The major tonality whose tonic lies a *perfect fifth below* and (indirectly), its relative minor, both having at their signature one flat more or one sharp less.

3. The relative minor whose tonic lies a *minor third below* and which has the same signature.

4. The corresponding minor which has the *same tonic* but whose signature has three descending alterations *more*, that is, three flats more or three sharps less.

If the original tonality is minor, its closest neighbors are:

1. The minor tonality whose tonic lies a *perfect fifth above* and (indirectly), its relative major, both having at their signature one sharp more or one flat less.

2. The minor tonality whose tonic lies a *perfect fifth below* and (indirectly), its relative major, both having at their signature one flat more or one sharp less.

3. The relative major whose tonic lies a *minor third above* and which has the same signature.

4. The corresponding major which has the *same tonic* but whose signature has three ascending alterations more, that is, three sharps more or three flats less.

These six modulations were much used by classical composers who generally proceeded very cautiously in order to avoid any transition brought on too suddenly.

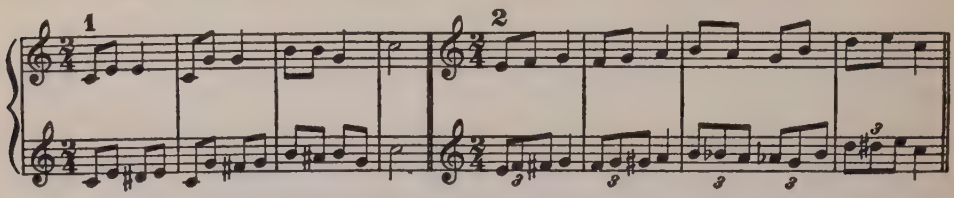
Passing to another key is usually effected by raising or lowering chromatically one or two notes of the old tonality, making it thus possible to introduce smoothly the dominant seventh of the new key because, as stated previously, a tonality is never firmly established without having brought in its dominant triad or dominant seventh followed by its tonic triad. It is not the writer's intention to teach how to modulate, this being one of the subjects treated in the course in Harmony, but, in order to interpret a composition intelligently, the student should be able to realize the different tonalities that are met in the development of the musical idea and consequently we will endeavor to show how to recognize a modulation when it takes place.

As mentioned already, a modulation is generally obtained by the introduction of an accidental, that is, a note foreign to the tonality in which the musical phrase is at the time, the said accidental becoming a diatonic note in the visited key because it belongs to the new signature, but every accidental making its appearance does not necessarily cause a modulation; some accidentals have a meaning and others have not. The question is: "How can one tell the difference?" This is what the writer is going to explain.

Before beginning to lay out some rules, let us keep in mind that there are two instances where an accidental plays *no rôle* at all.

First, it is when it is inserted between two notes of the same name and the same pitch as illustrated in the first of the two following examples.

The other instance is when the accidental is inserted between two consecutive notes either ascending or descending which in the tonality in question are normally separated by a whole step, the chromatic note forming thus a little bridge between them as seen in the second example.

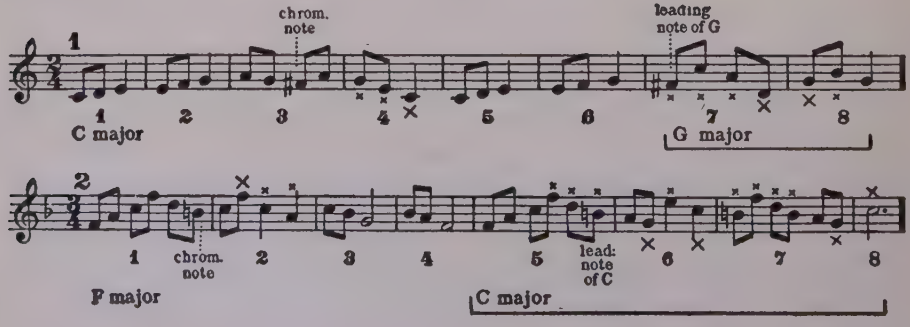


Apart from these two exceptions, the general rule is that when a note raised chromatically appears in a musical phrase (a natural changed to a sharp, a flat changed to a natural), there is the possibility of a modulation. If such is the case, this accidental becomes at once the leading-note of a new tonality and 3rd of its dominant seventh, but to prove its ownership, it must be accompanied by the root and at least one other note of the chord in question and be followed immediately by the tonic triad of the visited key, otherwise there is no modulation.

For instance, if an f♯ appears in C major it is likely to bring about a modulation to G provided the f♯ (which would become the leading-note of G, 3rd of its dominant seventh d–f♯–a–c) is accompanied by *d* (root) and at least one other note of that chord and followed immediately by the tonic triad of G (g–b–d).

Or, if a b♮ appears in F major, there is a possibility of a modulation to C provided the b♮ (which would become the leading-note of C, 3rd of its dominant seventh, g–b–d–f) is accompanied by g (root) and at least one other note of that chord and being followed immediately by the tonic triad of C (c–e–g). If in each instance those conditions are not met, there has been no modulation, and the accidentals f♯ and b♮ are respectively mere chromatic notes brought in to add some variety to the musical phrase.

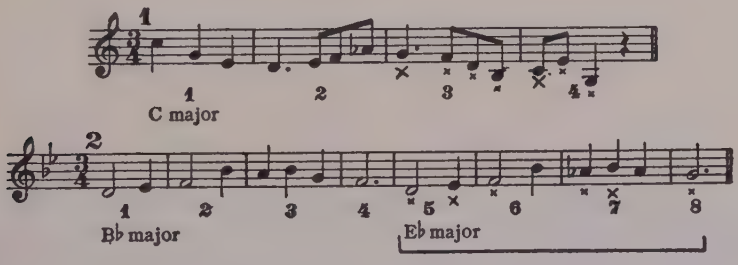
The two following examples illustrate both cases, the notes forming the tonic triad and the dominant seventh being marked with a little cross, a larger cross indicating the root of the two chords.



In the first example which is in C major, the f♯ of Measure 3 is just a passing note which *does not bring* about a modulation to G because it is *not accompanied* by *d*, root of the dominant seventh of that tonality; beside, it is followed immediately in Measure 4 by c–e–g, tonic triad of C which fact shows decidedly that there has been no change of key. However, in Measure 7, the f♯ *does bring* a modulation to G, because *it is accompanied* by all the other notes of the dominant seventh (d–f♯–a–c) and is followed immediately by *g–b–d* which form the tonic triad of G.

In the second example which is in F major, the *b*♮ of Measure 1 does not bring about a modulation to C because it is *not accompanied* by *g*, root of the dominant seventh of that tonality; beside, it is followed immediately by *f–a–c*, tonic triad of F; therefore, the b♮ is merely a chromatic note of no importance. But in Measure 5, the b♮ *does bring* a modulation to C because *it is accompanied* by all the other notes of the dominant seventh (*g–b–d–f*) and is followed immediately by c–e–g tonic triad of C; the same formula is repeated in Measure 7 and 8, thus ending the phrase.

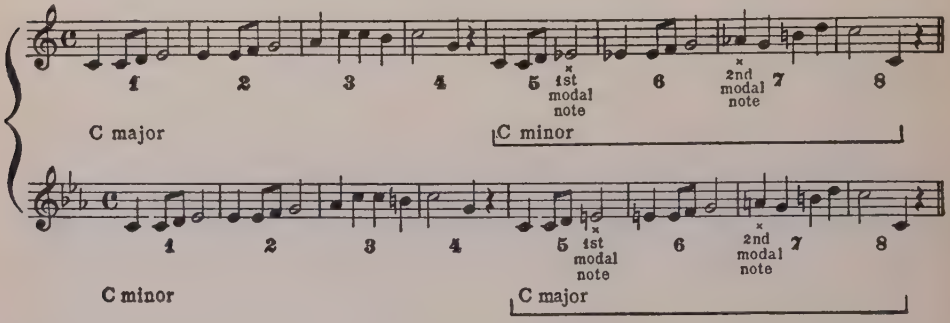
On the other hand, when a note *lowered chromatically* makes its appearance in a musical phrase (a natural changed to a flat, a sharp changed to a natural) there is also a possibility of a modulation having taken place.

If such is the case, the accidental in question loses at once its chromatic character and becomes a diatonic note, subdominant of the new tonality and 7th of its dominant seventh, but to prove its identity, the newcomer must be accompanied by the root and at least one other note of the said dominant seventh and be followed immediately by the tonic triad of the visited tonality. otherwise, no modulation was effected, and the accidental was simply a passing-note.

In the first of the above examples, the *a*♭ of Measure 2 is a passing-note which brings *no modulation* because it is followed immediately by the dominant seventh of C (g–b–d–f), the phrase ending with *c–e–g* which constitute the tonic triad of C major.

In the second example which is in B♭, the *a*♭ of Measure 7 does *bring* a modulation to E♭ (3 flats) because it is accompanied by the other notes of the dominant seventh of that tonality (b♭–d–f–a♭), the phrase ending on *g*, 3rd

of the tonic triad of E♭, the root and fifth (e♭ and b♭) being found in the preceding measures.

But when the altered note is the *mediant* (1st modal note) of the original major tonality and is accompanied by the tonic and dominant which are the root and 5th of the tonic triad, the modulation that took place is to the *corresponding minor* which has the same tonic but differs by its modal notes (3rd and 6th degrees); generally, if the submediant (2nd modal note) is in the vicinity, it is found to be lowered too; the dominant seventh is alike in both corresponding tonalities, fact which has been explained in a previous chapter.

This rule works both ways, that is, when the original tonality is minor, the raising of the mediant and of the submediant (3rd and 6th) brings a modulation to the corresponding major.

The first of the above examples is in C major; the opening phrase of four measures remains in the original tonality but in Measure 5, the *e* (mediant, 1st modal note) is lowered and in Measure 7 *a* (submediant, 2nd modal note) is also lowered, the phrase ending on *c* tonic, which is preceded by its dominant seventh (g–b♮–d–f); therefore a modulation to C minor has been effected.

The second example is the same as the first except that it has been turned around, this time, the original signature being that of C minor; in the second phrase, the raising of *e*♭ and *a*♭ (the two modal notes) brings a modulation to C major, corresponding tonality.

Now that these few rules concerning modulations have been laid out, let us try to apply them to the first two movements of a Sonatina by Muzio Clementi who belonged to the early part of the Classical period; he was called "Father of the Sonata" because he was the creator of this form of composition just as Haydn, being the originator of orchestral music, is yet known as "Father of the Symphony."

Before starting, the writer wishes to make it very clear that, beside modulations, the other object of this analysis is to point out once more to the student the importance of the rôle played by the dominant seventh, the frequency of its use and the feeling of perfect satisfaction it gives to the hearer when followed by the tonic triad, both chords forming then what is called a "perfect cadence."

Therefore, each time this formula will be found in the different tonalities visited, it will be encased within a bracket, the notes belonging to each chord will be marked with a little cross, a larger cross indicating the root.

Of course, the student will realize that when it is not the root which is the bass, the chord is inverted, but whatever the position the two chords will prove to be in, to simplify matters, they will be referred to as a "perfect cadence." Now let us proceed with our analysis.

The first movement of this Sonatina is in C major; it remains in the original key for six measures in the course of which a perfect cadence is being used (Meas. 4–5) thus establishing firmly that tonality before leaving it temporarily.

In measure 6, an *f*♯ makes its appearance creating the possibility of a modulation to G in which the newcomer would become the leading-note, but to prove that a modulation did occur, the *f*♯ has to be accompanied by some or all the other notes of the dominant triad, *d–f*♯*–a*, or the dominant seventh, *d–f*♯*–a–c*, and be followed by the tonic triad, *g–b–d*.

In this particular case, it happens to be so, as, close to the f♯ are *c–d* and *a*, the tonic triad (g–b–d) following immediately both chords being in their fundamental position because their individual root is at the bass.

From then on, until measure 15, the phrase remains in G as all the f's are sharped; an inverted perfect cadence is used again twice, the first time, in measure 9, the dominant chord is a triad instead of a chord of seventh as there is no *c* (7th) but the second time, in measure 11, it is a chord of seventh because the *c is* present. Just before the double-bar, a perfect cadence in its fundamental position establishes definitely the said tonality of G.

Right after the double-bar, in measure 16, we find a chord made up of g–b–d–f, which we recognize as being the dominant seventh of C in an inverted position as *f* (7th) is at the bass; it is followed by the tonic triad c–e–g also in an inverted position as *e* (3rd) is at the bass, but the said *e* (1st modal note) is flatted, bringing a modulation to C minor which is the corresponding tonality of C major, both having the same dominant seventh which is the case of all corresponding tonalities.

The phrase remains in C minor for eight measures in the course of which the perfect cadence is used three times; in measure 23, the dominant seventh appears again in its fundamental position *g* (root) being at the bass, but this time it resolves on the tonic triad of C *major* as *e* (1st modal note) is now made natural again. From then on there is no more modulation; the phrase remains in C major until the double-bar; during this period, the perfect cadence is used six times, the last time it is in its fundamental position thus bringing normally the movement to a close.

The second movement, an Andante, is in F major; it remains in that tonality for eight measures in the course of which two perfect cadences are introduced. The first one (in measures 3–4) consists of the dominant triad *c–e–g*, followed by the tonic triad *f–a–c*, both in their fundamental position;

the second, in measure 7, consists of the dominant seventh *c–e–g–b♭* and the tonic triad, both inverted. In measure 9, a *b♮* makes its appearance and is likely to bring a modulation to C in which tonality it would become the leading-note, but it has to prove its identity by being accompanied by the other notes of the dominant triad g–b♮–d or the dominant seventh, *g–b♮–d–f* and be followed by the tonic triad *c–e–g*.

The student will see that such is the case in measures 9-10 in which the two chords are found. Another perfect cadence in its fundamental position is used one measure later, establishing firmly the said tonality of C before leaving it in order to do some more visiting.

In measure 13, the *b♭* is resumed but accompanied by *e♭* and *f♯*. This may puzzle the student, but the rule is, that when two accidentals present themselves simultaneously, one being descending, the other ascending, it is the latter which generally indicates the new tonality, the said ascending accidental following the usual rule of becoming likely the leading-note provided it is accompanied by the other notes of the dominant seventh and is followed by the tonic triad, but when conditions are such, the tonality is *always minor*, the descending accidental being one of the modal notes.

In this particular case, the f♯ would become the leading-note of G minor, the *e♭* being the submediant, 2nd modal note; the tonic triad is *g–b♭–d*, and the dominant seventh is *d–f♯–a–c*. These chords are found twice in succession in measures 14-15, the first time both chords are inverted, the second time partly so. In measures 15-16, the *f* and *e* are natural again showing a return to the original key of F major, the perfect cadence in an inverted position being introduced in measure 16 and once again in measures 18-19, just before going visiting again for a short time, as an *e♭* is brought in at the beginning of measure 21.

The rule concerning a note chromatically lowered is, that it is likely to bring a modulation to a tonality found two and a half steps below in which the newcomer would become the subdominant and therefore the 7th of the dominant seventh chord, but the accidental in question must prove its identity by being accompanied by the other notes of the chord in question and be followed by the tonic triad of the new tonality otherwise there is no modulation.

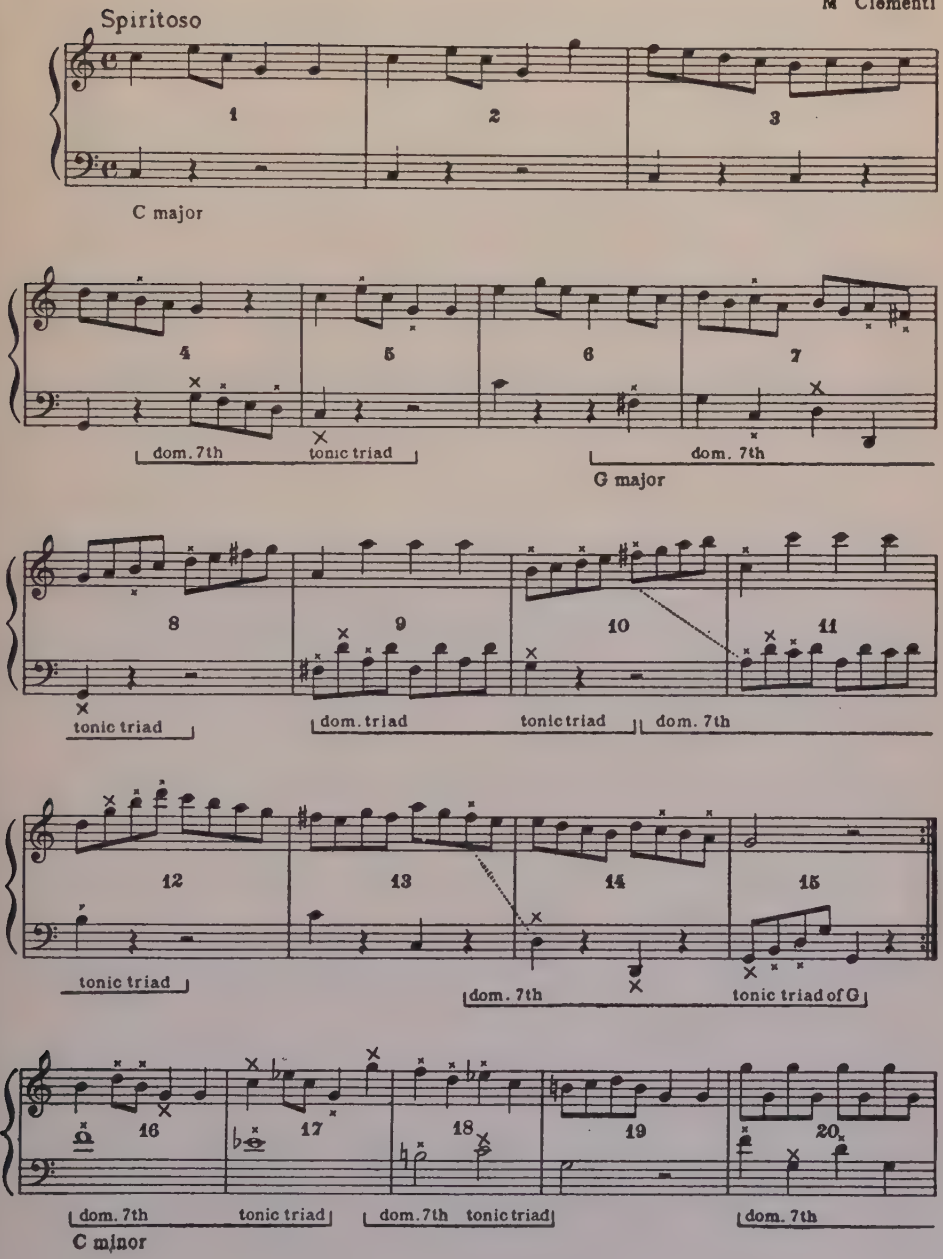
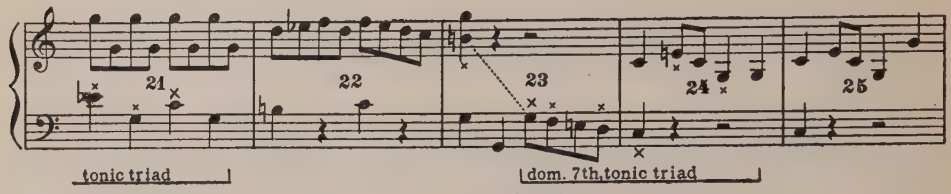
In this case, the new tonality would be B♭ (2½ steps below e♭); its tonic triad is *b♭–d–f* and its dominant seventh, *f–a–c–e♭*. Those two chords are found in measure 21–22, both in their fundamental position, consequently a modulation did take place.

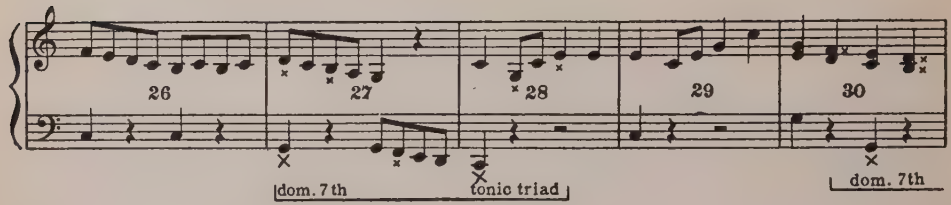
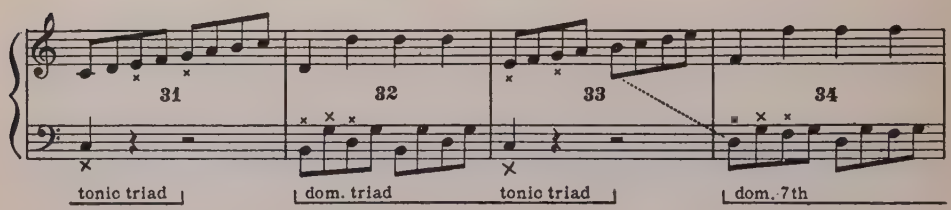
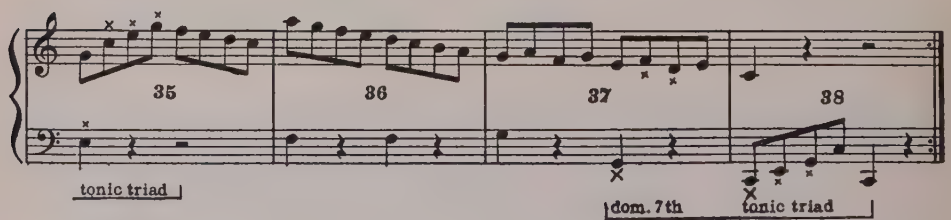
But this visit does not last very long as the *e♮* is resumed immediately in measure 23 which means a return to F; the *e♮* is accompanied by the other notes of the dominant seventh: *c–e♮–g–b♭* and is followed by the tonic triad *f–a–c*. From then on the phrase remains in its original tonality until the double-bar, a perfect cadence in its fundamental position bringing the Andante to a normal, satisfactory close.

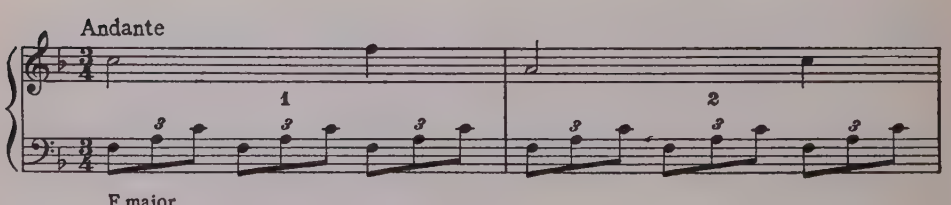
Sonatina

Op. 36, No.1

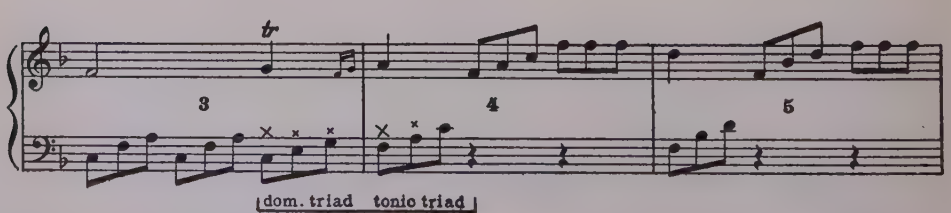
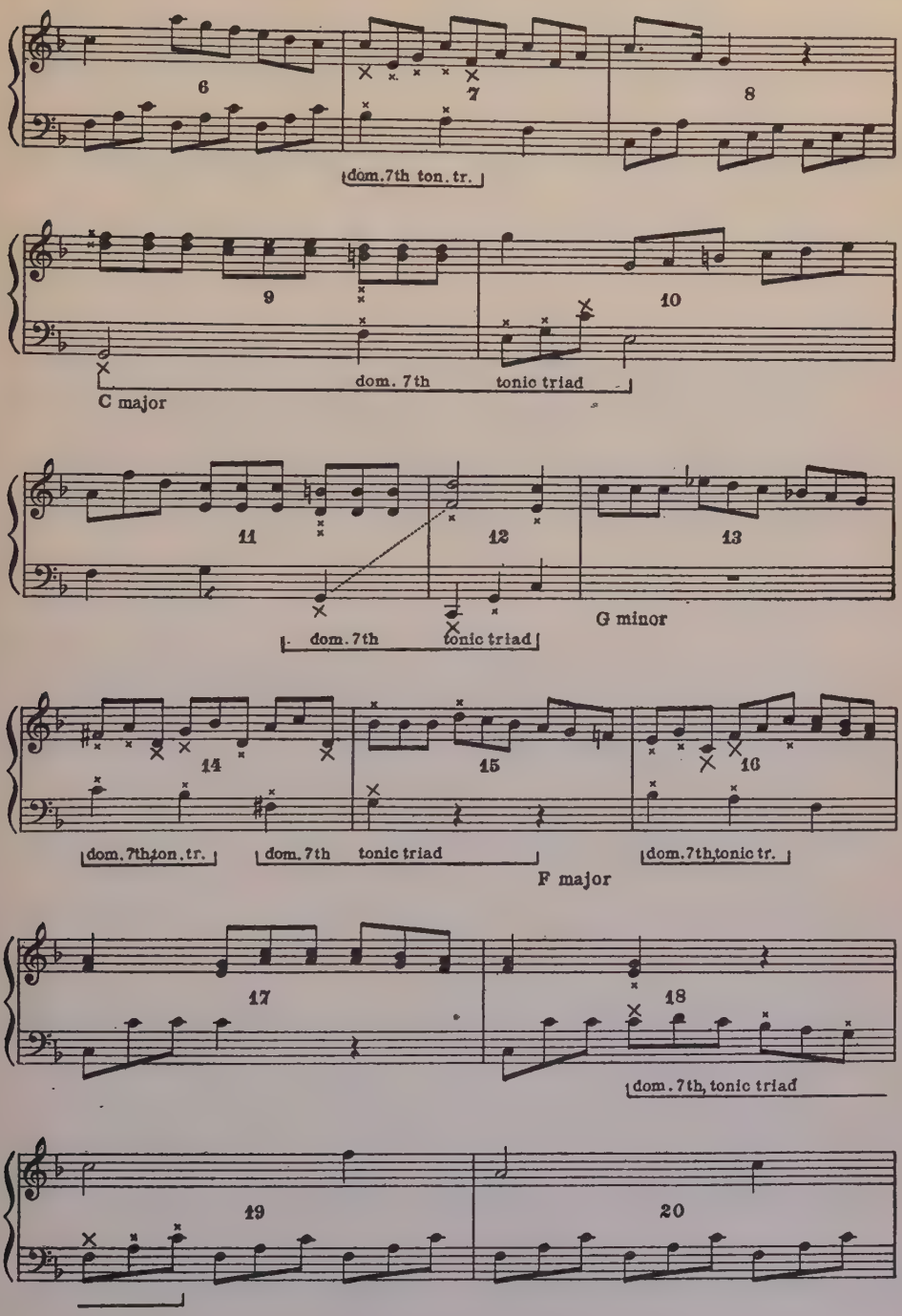
M Clementi



C major





F major



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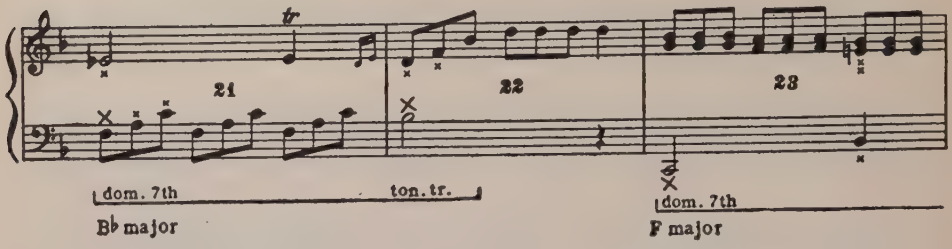
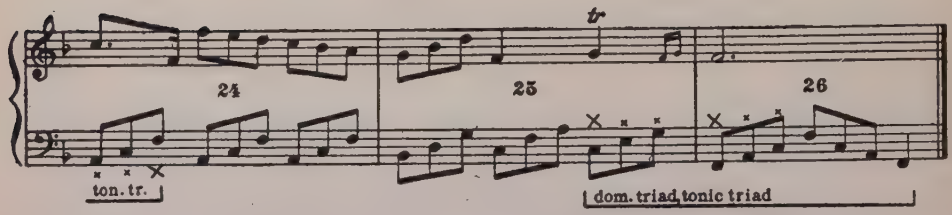
dom.7th ton.tr.
9
10
dom. 7th
tonic triad
C major
11
12
13
dom. 7th
tonic triad
G minor
14
15
16
dom.7th,ton.tr.
dom. 7th
tonic triad
dom.7th,tonic tr.
F major
17
18
dom. 7th, tonic triad
19
20





Before leaving this subject, the writer wishes to bring the attention of the student to the fact that the modulations just analyzed were all in keeping with the rule given at the beginning of this chapter and which is, that each tonality has on its visiting list six friendly neighbors upon whom it calls more often than on others.

Making a résumé of the above analysis, we find that in the first movement, the modulations were first from C to G (one fifth above) having at its signature one sharp, while C had nothing—the next modulation was to C *minor*, corresponding tonality of C major, having three flats at its signature, but corresponding with C major by the tonal notes *c–f–g*, both keys having the same dominant seventh; after this short modulation, the original tonality of C major is resumed until the end. In the second movement, the first modulation is also to the tonality one fifth above, from F to C, then to G minor, relative of B♭ major which is one fifth below F and has one more flat at its signature, then to B♭ major itself and back again to F.

This rule was also applied by classical composers to the different movements of Symphonies and Sonatas. Ordinarily, these compositions have three movements, although, at times, there are four; the first and the last movements are always in the same key; the middle movement, generally an Adagio, is written in a different key and so is the other if, beside, there is a Scherzo or a Minuet, but generally these new tonalities are kept within the intimate circle of neighbors mentioned previously. A few illustrations of this fact are given here.

BEETHOVEN'S SYMPHONIES

1st in C major

Allegro	Andante	Menuet	Finale
C major	F major	C major	C major

2nd in D major

Allegro	Andante	Menuet	Finale
D major	A major	D major	D major

3rd in E♭ (Eroïca)

Allegro	Adagio (Funeral March)	Scherzo	Finale
E♭ major	C minor C major C minor	E♭ major	E♭ major

4th in B♭ major

Allegro	Andante	Finale
B♭ major	E♭ major	B♭ major

5th C minor–major

Allegro	Andante	Finale
C minor	A♭ major	C minor C major

6th (Pastorale) F major

Allegro	Adagio	Allegretto
F major	B♭ major	F minor F major

and so forth.

Haydn's

Symphony in E♭ major

Adagio–Allegro	Andante	Menuetto	Finale
E♭ major	C minor-major	E♭ major	E♭ major

Military Symphony in G major

Adagio–Allegro	Allegretto	Menuetto	Finale
G major	C major	G major	G major

Beethoven's

Pathetic Sonata in C minor for piano

Allegro	Adagio	Rondo
C minor	A♭ major	C minor

Moonlight Sonata in C♯ minor

Adagio	Allegretto	Presto
C♯ minor	D♭ major	C♯ minor
	Enharmonic tonality of C♯ major	

Aurora in C major

Allegro	Adagio	Presto
C major	F major	C major
		C minor
		C major

Mozart's

"Jupiter" Symphony in C major

Allegro Vivace	Andante	Menuetto	Finale
C major	F major	C major	C major

Mendelssohn's

Violin Concerto in E minor–major

Allegro	Andante	Allegro
E minor	C major	E major

and so forth

TRANSPOSITION

Transposition consists in writing or performing a musical composition in another key than the one in which it was first written.

The object of such an operation is to put in a more suitable tonality a piece of music which is too high or too low for certain voices or instruments. For instance, if a song, written for contralto has to be sung by a soprano, it will have to be transposed in a higher key, or if a song written for tenor has to be sung by a baritone, it will have to be lowered. Same for instruments; if a piece written for violin has to be played on the 'cello, it will have to be written in a lower key, etc.

To obtain this result, all the notes of the original composition are systematically exchanged for other notes which are situated either above or below at a given interval, this interval being determined by the distance existing between the old tonality and the new one.

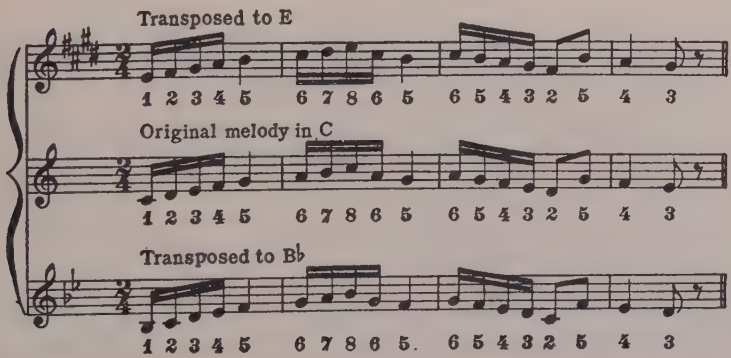
The musical idea remains absolutely the same, each note occupies the same position in the new tonality as the former note did in the original key; what was before a tonic, becomes again a tonic, a supertonic a supertonic, a dominant a dominant, a leading-note a leading-note, etc., but, owing to the fact that the transposed notes occupy another place on the staff, they naturally have another name and another pitch.

Written transposition is not difficult; one needs only to have patience and care which is an easy matter when one has plenty of time to think. The best way to proceed is first to determine the key signature of the new tonality and write it at the beginning of each staff; after that, one should ascertain the exact interval existing between the original key and the one to which the composition has to be transposed.

When this is well established, one writes the notes on the staff according to their new names, being sure to preserve their individual value.

For instance, a melody written in C major has to be transposed to B♭ major; the latter has two flats at its signature and lies at the distance of a major second (one step) below C, therefore, each note of the melody in question has to be exchanged for the note which is a whole step below, the latter occupying the same position in the new tonality as it did in the former one; the 1st, 2nd, 4th, 6th notes of C will become the 1st, 2nd, 4th, 6th of B♭ and so forth.

On the other hand, if the same melody in C has to be transposed to E major, one would proceed as follows: E lies at the distance of a major third (two steps) above C; consequently all the notes of the original melody will be exchanged for those that are two whole steps above and which belong to the tonality of E major having four sharps at its signature; *c*, tonic of C, will become *e*, tonic of E; *a*, submediant of C will become *c*♯, submediant of E, etc.



When accidentals are introduced in the original composition, they are exchanged in the transposed copy for notes which are also chromatically altered, but the qualification of those accidentals does not always remain the same, that is, a note chromatically sharped in the original tonality does not necessarily become a sharp in the new tonality, a flat a flat, a natural a natural, etc., whether the qualification of the accidental is retained or has to be changed depends on the signature of the new key.

In the following example, the original melody is in C; in it, the *d* and *f* (2nd and 4th degrees) are chromatically raised with a sharp while *a* (6th degree) is chromatically lowered with a flat.

This short phrase is first transposed to E♭ (3 flats) minor third above (1½ step).

The *f* (2nd degree) being a natural note in the scale of E♭, when raised chromatically, requires a sharp.

The *a* (4th degree) being flat at the signature of E♭, when raised chromatically, requires a natural.

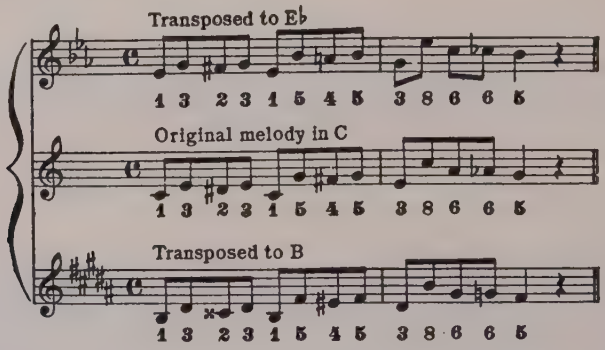
The *c* (6th degree) being a natural note in the scale of E♭, when lowered chromatically, requires a flat.

When the given theme is transposed to B (5 sharps), minor second below (one half-step), the qualification of the accidentals changes again.

The *c* (2nd degree) being already sharp at the signature, when raised chromatically, requires a double-sharp.

The *e* (4th degree) being a natural note in the scale, when raised chromatically, requires a sharp.

The *g* (6th degree) being sharp at the signature, when lowered chromatically, requires a natural.



Those elementary principles apply to every tonality and will always prove successful if one is careful to first establish the position that the altered note occupies in the scale in which the original theme is written, after that it is only a matter of comparison. Of course, transposition is a science in itself, and the author does not feel that a very thorough study of it belongs to this book, but the few points given above may help the student who wants to acquire a general idea of it.

As for transposition at sight, it is quite difficult especially if it is of music written for piano or organ where the G clef is used for the right hand and the F clef for the left. This is where a fluent knowledge of the seven different clefs is absolutely necessary and such is acquired only through constant practice.

PART IV

GENERAL RULES ON INTERPRETATION

Tempo

When music is executed, it is not always done in the same manner; some compositions are played or sung fast or moderately fast, others are rendered slowly or moderately so. Those different ways constitute what is called: "the Tempo."

Therefore, *Tempo* is the rate of speed at which a musical work has to be performed; it is indicated by the composer himself, generally by means of certain Italian expressions which have been adopted the world over; still, in modern editions, one finds occasionally terms written in the vernacular, either in French, English or German.

The "tempo-mark" is always set at the beginning of the composition right above the first measure, and the executant is supposed to abide by it.

The terms most generally employed are as follows:

Terms	*Abbreviations*	*Signification*
Largo		Broad and dignified.
Lento		Very slow and stately.
Larghetto		Not quite as slow as largo.
Grave		With a serious expression.
Adagio		Slow, tranquil.
Andante	And^{te}	Moderately slow, leisurely.
Andantino	And^{mo}	Somewhat faster than Andante.
Allegretto	All^{tto}	Moderately fast.
Allegro	All^{o}	Brisk, lively.
Vivace		Faster than Allegro.
Presto		Rapid.
Prestissimo	Prest^{mo}	Exceedingly rapid.

By combining the terms stated above with the following, more precision is obtained:

Alla	In the manner or style of.
Assai	Quite.
Ben	Well.
Con	With.
Dopo	After.
Ma	But.
Meno	Less.
Moto	Animation.
Molto	Very or much.
Molto piu	Much more.
Mosso	Lively.

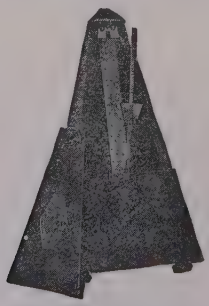
Niente.....Nothing.
Non.....Not.
Non molto.....Not very.
Non tanto.....Not as much.
Non troppo....Not too much.
Poco.....Little.
Poco a poco....Little by little.
Poi or Allora...Then.
Quasi.....Almost like.
Sempre.....Continually.
Senza.....Without.
Simile.....In the same manner.

Consequently some expressions like these, beside many others, are often found:

Terms	*Signification*
Adagio poi Allegro.....	Slow, then fast.
Allegretto poco mosso.....	Allegretto rather lively.
Allegro, ma non troppo.....	Fast, but not too much so.
Allegro molto vivace.....	Very quick Allegro.
Andante molto.....	Very slow.
Andante Stretto.....	Slowly but somewhat agitated.
Andantino, quasi Allegretto..	Moderately slow, almost like Allegretto.
Poco meno mosso.....	A little less fast.
Poco più mosso.....	A little faster.

However, all those terms are more or less vague, as everyone is not likely to interpret them in the same way; for instance: Allegro, which means fast, would be taken by some performers at a faster speed than by others, or Adagio, which means slow, would be rendered more slowly by some executants than by others.

To obviate to that deficiency, there is an instrument which gives the exact rate of speed that the composer had in mind, this instrument is the *Metronome*.



METRONOME

This useful device was invented early in the 19th century by a Hollander named Winkel. A few years later it was slightly perfected by a German named Maëlzel and ever since the World has erroneously given to the latter the credit for the whole invention.

The instrument in question consists of a conically shaped wooden-box approximately nine inches in height and four and a half square at the bottom.

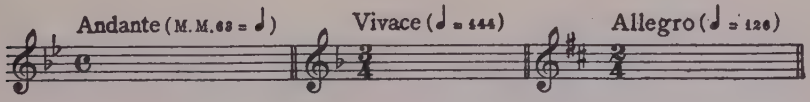
Standing erect against the front panel, is a thin flat steel rod connected with some inner clock-work which, when wound up, causes the rod to move to and fro while emitting a moderately loud tick. A little weight, which can slide up or down, is attached to the rod and acts as pendulum to regulate the speed; the higher the weight, the slower the oscillations are, the lower it is set, the faster do the oscillations become.

Behind the rod, printed on the body of the box is a chart of numbers ranging from 40 to 200; they determine the number of oscillations or ticks obtained in one minute.

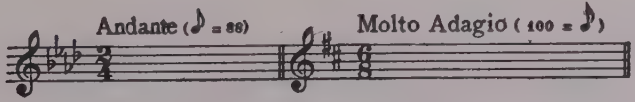
For instance, when the top of the weight is on a straight line with No. 50, it means that fifty strokes are effected in one minute, each lasting therefore one-fiftieth of a minute; if the weight is set at No. 100, it means that there are one hundred strokes in a minute, each one lasting one-hundredth part of a minute, and so forth.

With such accurate means of indicating the Tempo, it is not difficult for composers to inform the performer of the exact speed at which their works have to be executed.

Consequently, quite frequently, a Metronome number is set next to the Tempo-mark at the beginning of a composition; when such is the case, generally two *M's* are used (M.M.) being an abbreviation of: *M*etronome of *M*aëlzel; a number follows accompanied by the value of note which should be equivalent to one stroke of the pendulum and which, as a rule, is the unit of beat; yet, quite often the letters M.M. are not used as it is taken for granted that everyone knows that the number following the tempo-mark refers to the Metronome of Maëlzel.



Occasionally, in very slow tempo, the Metronome number indicates the time allotted to the half or the third of a beat.



In the first of the preceding examples which is in $\frac{2}{4}$, the Metronome number: (♪=88) indicates that each stroke is equivalent to an eighth-note which is half of the beat; therefore there are two strokes of the Metronome in each beat.

In the second example which is in $\frac{6}{8}$ (compound measure in two beats) the Metronome number: (100=♪) indicates that each stroke is equal to one-eighth or the third of a beat whose unit is a (♩.); consequently there are three strokes of the Metronome for each beat.

On the other hand, one finds occasionally a Metronome number indicating the time in which the whole measure has to be executed; naturally, it is done only when the tempo is very fast.

In watching a conductor lead his orchestra in the case just mentioned, the uninitiated might get the impression that, in that particular composition, the measures have only one beat which of course is erroneous as there are no measures in *one* beat; the two or three beats are actually there, but they are allotted so little time that it would mean quite an exertion to beat them out individually, so the composer decreed that they should be put together and be given only one stroke of the baton, (which, by the way, is the stick with which a conductor beats time).

In Beethoven's Pastoral Symphony, the first movement whose tempo-mark is *Allegro ma non troppo* in $\frac{2}{4}$, has (M M ♩=66), meaning that the two beats, represented by a half-note, are given only one stroke of the Metronome and have to be executed in the 66th part of a minute. In the same Symphony, the third Movement, an *Allegro* in $\frac{3}{4}$ has (M M ♩.=108) meaning that the three beats, represented by a dotted half-note, have to be executed in the 108th part of a minute; such is also the case of the second movement of the Ninth Symphony which is a *Molto Vivace* in $\frac{3}{4}$ (M M ♩.=116), etc.

REMARK: Sometimes the student may come across works of Old Masters written before the Metronome was invented, yet having a Metronome number just the same. These are modern editions revised by musical authorities who followed traditions and also used their own good judgment in the matter.

Very often, in the course of a composition, artistic interpretation demands that the rate of speed be modified.

Among the expressions most generally used for this purpose are the following:

To Accelerate the Speed

Terms	*Signification*
Accelerando	Accelerating gradually.
Affretando	Suddenly faster.
Agitato	With agitation.
Animato	With animation.
Doppio movimento	Twice as fast.

Più mosso.....Faster.
Pressante, Stretto, Stringendo.....Hastening the movement.
Veloce.....Rapid, swift.

To Slacken the Speed

Terms	*Abbreviations*	*Signification*
Allargando	Allarg.	Broadening the movement.
Commodo		At a convenient pace.
Meno mosso		Less fast.
Rallentendo, Ritardendo	Rall, Ritard	Growing slower.
Ritenuto	Riten	To hold back the movement.
Slargando		Broadening.
Stentando		Dragging and heavy.

To Hold Back the Speed Temporarily

Terms	*Signification*
Ad libitum	At will.
A piacere	At pleasure.
Senza tempo	Without paying strict attention to time-values.
Tempo rubato	Allowing the performer to express his emotions according to his fancy even at the sacrifice of rhythmic accuracy.

When the prolongation of just one note or a rest is desired, a sign like this called *hold* or *pause*, is set over or under it; the extra time allotted to the note or rest in question is left to the discretion of the performer; yet, it is generally understood that it should be given approximately the double of its normal value in the measure.

To Resume the Regular Speed

Terms	*Signification*
A tempo, A battuta, Tempo primo	To resume the original speed.
Lo stesso tempo	The same speed although the time signature is changed.
Misurato	In exact tempo.
Tempo giusto	In the right tempo.

EXPRESSION-MARKS

Just as well as a piece of music is not executed at the same rate of speed throughout, it is not rendered either with the same volume of sound from the beginning to the end.

According to the emotions that the composer wishes to impart to the listener, the intensity of the sound is modified. One phrase may be loud, another soft; one may begin softly and the sound being increased in volume until a climax is reached; and then again, another phrase may begin loudly and the sound being decreased gradually until it reaches hardly a whisper. Those fluctuations are very effective and add color to the execution being sometimes called "shadings" as compared to the lights and shadows of a painting.

Although much is left to the individual taste of the interpreter, composers consider this subject as being of the most vital importance, and in order to give their own idea about the artistic rendition of their works, special Italian expressions have been adopted and are being used constantly. Those met the most often are as follows:

Grades of Intensity	*Terms*	*Abbreviations*	*Signification*
Low:	Dolce		Sweet, suave.
	Piano	p.	Soft.
	Dolcissimo	dolcis.	Exceedingly soft.
	Pianissimo	pp.	
	Un poco piano	poco p.	A little soft.
	Mezzo piano	mp.	Half soft.
	Sotto voce	sot: v.	As compared to a subdued tone of voice or under one's breath.
	Mezza voce	mez: v.	
Increase:	Un poco forte	poco f.	A little loud.
	Mezzo forte	m. f.	Half loud.
	Pianoforte	pf.	Soft, followed immediately by loud.
	Crescendo	cresc.	Gradually louder.
High:	Forte	f.	Loud.
	Forte subito	f. subito	Suddenly loud.
	Sforzando	sfz.	Increase the sound instantly.
	Rinforzando	rfz.	
	Tutta forza		With full force.
	Fortissimo	ff.	Exceedingly loud.
Decrease:	Forte piano	fp.	Loud, followed suddenly by soft.
	Calando	Cal.	Gradually softer.
	Decrescendo	Decresc.	
	Diminuendo	Dim.	

Morendo	Moren.	Letting the sound die away.
Perdendosi	Perd.	
Smorzando	Smorz.	
Quasi ecco		Like an echo.

There are also signs which indicate the increase or decrease in the intensity of the sound; these are generally applied to a passage or phrase covering one or several measures.

This sign indicates that the phrase should gradually grow louder.

This sign indicates that the phrase should gradually grow softer.

This sign which is a combination of the two preceding, means that the phrase should first grow louder and then grow softer.

Beside all the terms and signs already mentioned which modify either the speed or the intensity of the sound, there are many other expressions which affect the general character of a whole composition or of a single phrase.

Among them are the following which are found most frequently:

Terms	*Signification*
Accentuoto	Accented
Affabile	Sweetly
Affettuoso	Affectionately
Alla polacca	In the style of a Polonaise
Alla marcia	In march style
Allegremente	Vivaciously
Amabile	Amiably
Amoroso or Con amore	Lovingly
Appassionnata	With passion
Ardito	With spirit
Ben legato / Ben tenuto	Very smoothly and well sustained
Brillante	Brilliant—sparkling
Calmato	Resuming tranquillity
Cantabile	With a singing quality
Cappricioso	Capriciously
Commodo	Leisurely
Con affetta	With emotion
Con anima	Soulfully
Con bravura	With boldness
Con brio	With spirit
Con calore	With warmth

Terms	*Signification*
Con delicatezza or Delicatemente	With delicacy
Con delirio	With frenzied passion
Con dolore or Doloroso	With grief
Con espressione or Espressivo	With expression
Con fuoco	With fire
Con furore	With fury
Con grazia or Grazioso	Gracefully
Con gusto	With taste
Con molto passione	With much passion
Con precisione or Preciso	Precise—exact
Con slancio	With impetuosity
Con tenerezza or Teneramente	With tenderness
Con timore	With timidity
Da cappella	In a devotional style
Da chiese	In church style

Terms	*Signification*
Deciso	With decision
Delirante	With frenzy
Devoto	With devotion
Disperato	With despair
Drammatico	Dramatically
Energico	Energetically
Furioso, Furibondo	Furiously—with angered passion
Giocoso	Joyfully
Imperioso	Haughtily
Innocente	Innocently
Insensibile	Imperceptibly
Irato	Wrathfully
Irresolute	Hesitatingly
Lamento	Sorrowfully
Leggieramente	Lightly
Maestoso	Majestically
Malincoma	Dejectedly
Marcato	With emphasis
Nobile or Nobilmente	With nobility
Parlando	Singing with very clear enunciation, like speaking
Patetico	Pathetically
Penserioso	Pensively
Pomposo	Pompously
Preciso	Precise—exact
Precipitando	To hurry suddenly
Recitativo	In a declamatory style
Religioso	With a religious spirit
Riposato	With repose
Risoluto	With decision
Risvegliato	Lively—animated
Robusto	Firm and bold
Rustico	In a pastoral mood
Sentimento, Sentito	With feeling
Serioso	In a serious mood
Scherzando	In a playful mood
Sonoramente	Sonorously
Sospirando	Vocal effect imitating sighing
Sostenuto	With a sustained quality of tone
Tranquillo	Quietly
Tristamente	Sadly
Vivace	With vivacity

Beside the terms previously given and explained, there are to be found in musical compositions many other Italian words which, although not referring to speed or expression, are there to give to the executant information on different subjects concerning interpretation.

Among them are the following:

Terms	*Signification*
Alla	In the style of
Attacca	To start immediately what follows, without intermission
Bis	To repeat
Col canto or Colla voce	To follow the voice when accompanying
Come	As—like
Come avanti	As before
Come prima	As at first
Come sta	As it is written
Contra	An octave below
Corda	String
Da	From
Dei	Of the—than the
Doppio	Double
Doppio movimento	Twice as fast
Due	Two
Due volte	Twice
Due voci	Two voices

Terms	*Signification*
Fermata	A pause preceding the execution of the cadenza in a concerto for an instrument
Fine, Finito	End—close
Fino	As far as
Giusto	Exact—precise
Gusto	Taste
Di buon gusto	In good taste
Idem	Same as previously
Lunga	Long
Lunga pausa	A long hold
Mano destra	Played by the right hand
Mano sinistra	Played by the left hand
Mezzo	Half
Ossia, Overro	Or—else. Generally used when indicating an easier way to execute a certain phrase
Piccolo	Small
Portamento	Italian word meaning: To "carry the voice" gliding smoothly from one note to another in slurring lightly over the intermediate sounds
Prima	First
Seconda	Second
Prima voce	Soprano
Seconda voce	Alto or Second Soprano
Replica	Repetition
Ripigliare	To resume

Terms	*Signification*
Segue, Segue l'aria	Follows, The aria follows
Senza	Without
Senza pedale	Without pedal
Senza ritardando	Without retarding
Simile	In the same manner
Sopra, Come sopra	Above, As above
Sordini	Mute for violin
Con sordini	With the mute
Senza sordini	Without the mute
Sotto	Below—under
Sotto voce	Under one's breath—in an undertone
Una—Uno	One
Una corda	Direction to use the soft pedal in piano playing the result being that the hammers strike only one string
Tre	Three
Tre corde	Direction to release the soft pedal which results in the hammers striking the three strings
Vibrato	Strongly accented and diminishing in intensity while holding the note
Volta	Time
Prima volta	First time
Secunda volta	Second time
Volti subito	Turn the page quickly. Its abbreviation is V. S.

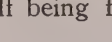
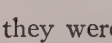
ACCENTUATION

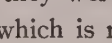
Accentuation is to music what a clear enunciation and varied inflexions of the voice are to a spoken language; it brings into relief certain passages which

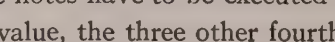
otherwise would remain in the shade, thus adding life and color to the message that the composer wishes to impart to his hearers.

There are terms as well as signs which show what are the phrases, parts of phrases or even just one note that have to be executed in a special manner. Among those is the *slur* (⁀) a curved line which, when drawn above or under a series of notes, indicates that they all belong to the same sentence and have to be rendered in a smooth and close connection with no breaks between the notes. In Italian, this manner of playing or singing is expressed by the word: "Legato." In opposition to "legato," there are times when, in order to obtain a certain effect, the notes *have* to be disconnected, slightly detached from each other as though there were rests in between. The Italian word expressing this sort of touch is: "Staccato": it is indicated by dots placed above or under the notes.

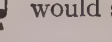
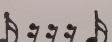
There are three different kinds of "staccato": the *light*, the *sharp* and the *heavy* Staccato.

The *light Staccato*, which is represented by small round dots (. . . . . .) means that the notes have to be executed as if they were written in half their own value, the other half being filled with a rest. For instance,  would sound as though they were:  .

The *sharp Staccato* which is represented by pointed, wedge-shaped dots (▾ ▾ ▾ ▾) means that the notes have to be executed as if they were written in the fourth of their own value, the three other fourths being filled with rests. Consequently,  would sound as though they were:



This variety is used principally in piano music. It corresponds to the "Pizzicato" (Pizz) of String Instruments which is obtained by plucking the strings with the finger in opposition to "Legato" which is produced by long drawing of the bow.

The *heavy Staccato* which is represented by round dots and a slur (⁀ . . . . .) indicates that the notes have to be executed as if they were written in three-fourths of their own value, the last fourth being filled with a rest. Consequently,  would sound as though they were: 

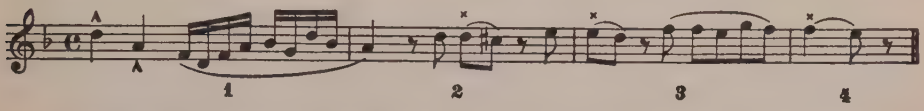
This form of *Staccato* is expressed by the Italian words: "Mezzo legato" (half legato) and also "Portamento."

When, in the course of a phrase, a small slur is set above or under *two notes* of a *different pitch*, it means that the first of the group has to be slightly accented, while the second is given very little importance just as in words of two syllables like: *ta*ble, *pi*ano, *an*gel, etc.

When a short stroke like this (–) is set above or under a note it means that the latter has to be emphasized and held firmly during its full time value; the Italian word expressing this effect is "Tenuto" (ten).

A sign like this: (<) placed above or under a note signifies that the latter should be strongly accented, its intensity gradually diminishing while being held; the Italian word for it is "Vibrato."

When one or several notes have to be given individual prominence, the following sign (v) is placed above or under them; the Italian word expressing this manner of attacking the note is: "Martellato," meaning "hammered."

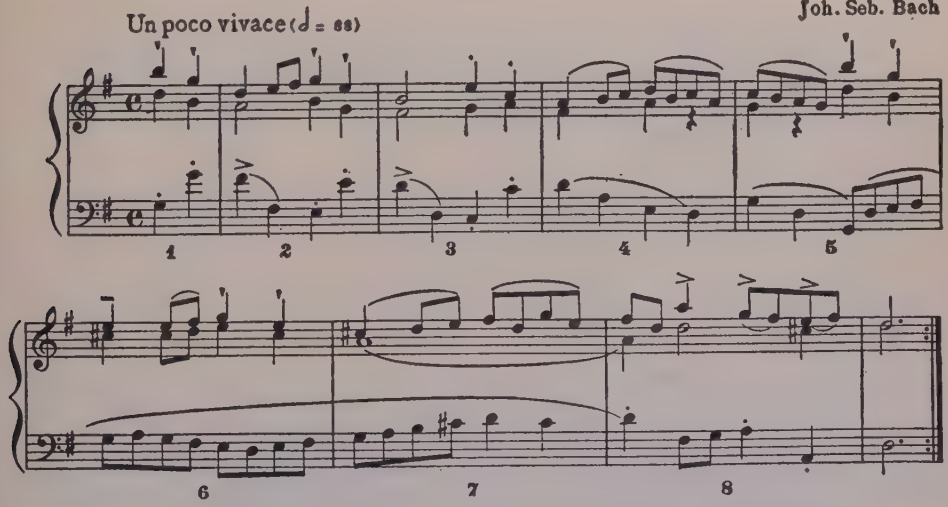


The first measure of the above example contains two illustrations of *Martellato* while the following measures contain several pairs of slurred notes, the first of each little group being well accented; the larger slurs, one set under the eight-sixteenths of Measure 1 ending with the quarter of Measure 2, the other above the five-eighths of Measure 3 indicate short *legato* passages.

The following is an example of light and sharp *Staccato*, of *legato* slurred notes and accents.

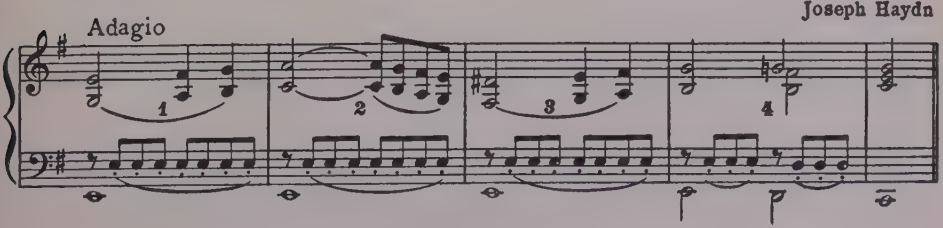
Gavotte

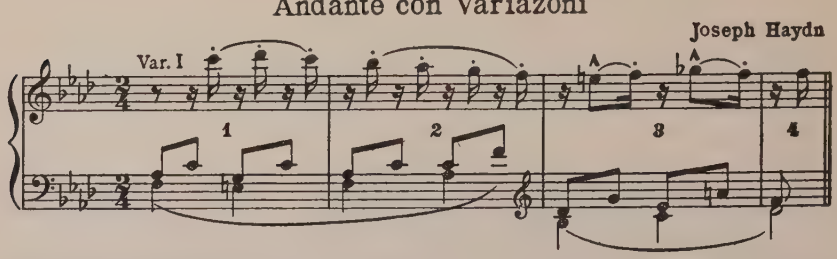
Joh. Seb. Bach



The two following are examples of heavy *Staccato* or *mezzo legato*.

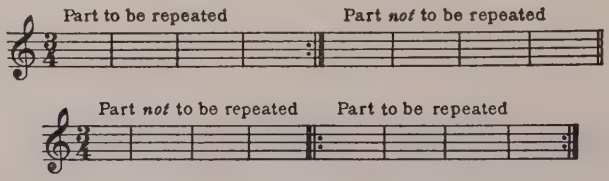
Joseph Haydn



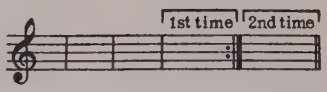


Beside these different signs affecting the manner in which notes have to be attacked, there are other signs referring to certain phases of the execution.

For instance, quite frequently, especially in Classical Compositions, there are parts that have to be repeated, and to indicate that such is the case, a double-bar, accompanied by two dots, has been agreed upon, the part to be repeated being always on the same side as the dots.



When a part has to be repeated, therefore played twice, the second time the ending varies occasionally. When such is the case it is indicated by two double-barred measures above which are the Numbers 1–2 respectively. The first time, the part in question ends with Measure No. 1, and is played over again and when the end is reached for the second time, Measure No. 1 is skipped and Measure No. 2 takes its place.



At other times, one may find a sign like this (𝄋) set above the first measure of a piece, the same sign appearing again under the double-bar of the last measure, while somewhere in the middle there is another double-bar above which is written the word: "Fine."

This indicates that the piece has to be played right through until the 𝄋 is reached, then started all over again from the same sign set at the beginning until the middle double-bar and the word *Fine* which in Italian means "End."

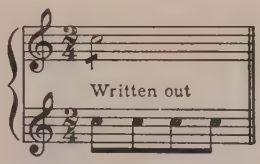
Occasionally the 𝄋 of the last measure is accompanied by the Italian words "Dal Segno al Fine" which means: "Play once more from the sign 𝄋 of the beginning until *Fine* or end."

Frequently, instead of 𝄋, the letters D. C. are found; these are an abbreviation of the Italian "Da Capo," which signifies: "From the head or beginning to *Fine*." In each case the meaning is exactly the same.

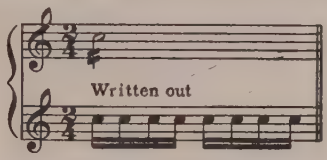
ABBREVIATIONS USED IN THE WRITING OF NOTES

When a certain musical as well as rhythmic pattern is to be repeated several times within a measure and at times during several measures, in order to avoid writing all the notes, it is customary to use some signs which act as substitutes.

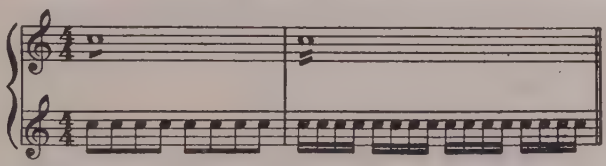
For instance, if the stem of a half-note is crossed by one stroke it means that the note in question has to be played in eighths, being therefore repeated four times like this:



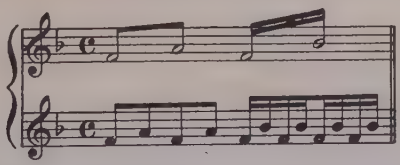
If there are two strokes, it has to be played in sixteenths and repeated eight times.



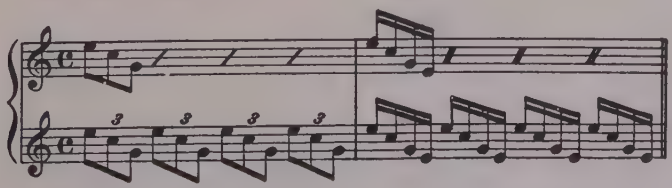
When a whole note is concerned, if one stroke is set under it, it is played in eighths, consequently repeated eight times—two strokes mean sixteenths.

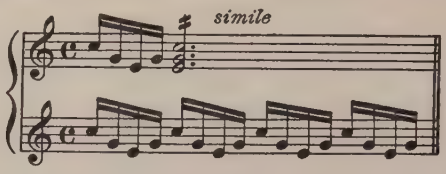


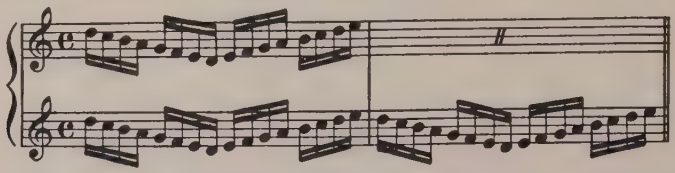
The same applies to two notes which have to be played alternately:



In the case of an arpeggiated chord, the first group is written out and the stroke or strokes (according to the value of notes) are set across the staff like this:



Sometimes the Italian word "Simile," meaning: "In a like manner" is used.

When one measure is the exact duplicate of the previous one, one or two strokes (according to the value of notes) are drawn across the staff.



NOTES OF EMBELLISHMENT CALLED ALSO GRACE-NOTES OR JUST GRACES

Grace-notes are to a melody what frills and laces are to a dress; they soften the lines and add delicate and piquant little touches to the whole ensemble.

In the 17th and 18th centuries, embellishments were very much the style, they are found constantly in the works of Couperin, Rameau, Scarlatti, etc., they were well suited to the harpsichord on which they produced quaint effects.

Originally, graces were written in very small type to differentiate them from the melody proper, but the real reason of their being of such diminutive size was that harmonically, they did not belong to the chords upon which the melody was built; they were dissonances which, at the time, were forbidden unless their entrance was carefully prepared, but, in writing them in very small notes, showing ostensibly that they were foreign to the melody, composers managed to remain within the rules and yet, have their own way. In modern music where dissonances reign supreme, graces are written in ordinary notes as there is no reason anymore for hiding them, nobody questioning their right of being there; beside, in this way, composers are sure that they will be executed according to their wishes. There are several varieties of Embellishments, among them, the simplest and most frequently used are: the *Appoggiatura*, the *Gruppetto* (called "Turn" in English), the *Mordente* and the *Trill*.

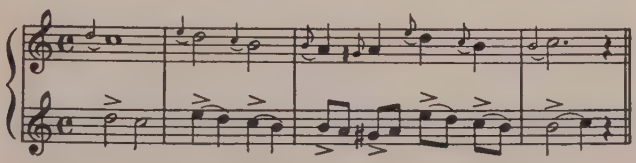
APPOGGIATURA

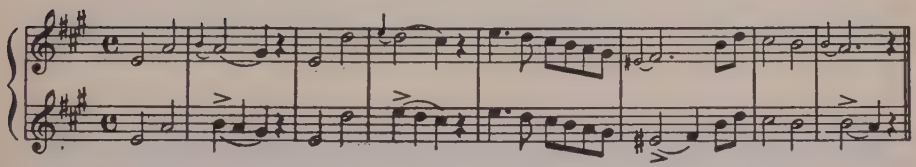
An *appoggiatura* is a tiny little note set in front of one of the melody (called also *principal*) notes; it is either the degree immediately above or immediately below and is often referred to as the upper or lower auxiliary; it borrows its time-value from the principal note and also its accent.

There are three kinds of *appoggiaturas*, the *long*, the *short*, and the *double*.

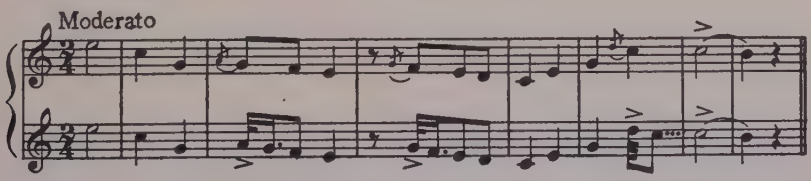
The *long appoggiatura*, placed before a principal note, borrows *half* of the time-value of the latter; for instance, when set before a whole note, it is played as a half-note, a stress being put on it, while the real melody-note is also played as a half-note, but is unaccented; if placed before a quarter-note, both notes are played as eighths, the first being accented, etc. Generally, the figure of the *appoggiatura* expresses the time-value that should be given to it, but unfortunately this rule is not always followed.

If the *appoggiatura* precedes a dotted-note, it borrows two-thirds of its time value as seen in the last measure of the following examples.

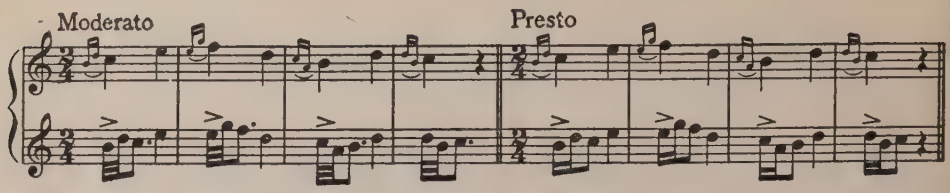




The *short appoggiature* is also placed before the melody-note; it is represented by an eighth with a slanting stroke across the hook (𝅘𝅥𝅯) and, like the long *appoggiatura*, receives the accent, borrowing its time-value from the principal note. As a rule it is executed very swiftly; when placed before a quarter, it is given the value of a sixty-fourth; before an eighth, it is played as a thirty-second.

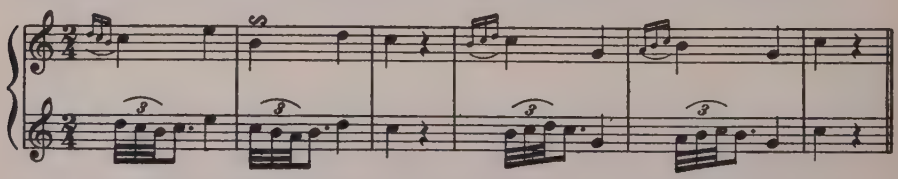


The *double appoggiatura* is a combination of the upper and lower graces following each other in quick succession; they precede the melody-note and are usually written as sixteenths, although seldom executed as such except in exceedingly fast tempo; ordinarily, they are played as thirty-seconds and their time-value is subtracted from the principal note. The double *appoggiatura* may begin either with the upper or lower grace, the starting note being always well accented.



GRUPPETTO OR TURN

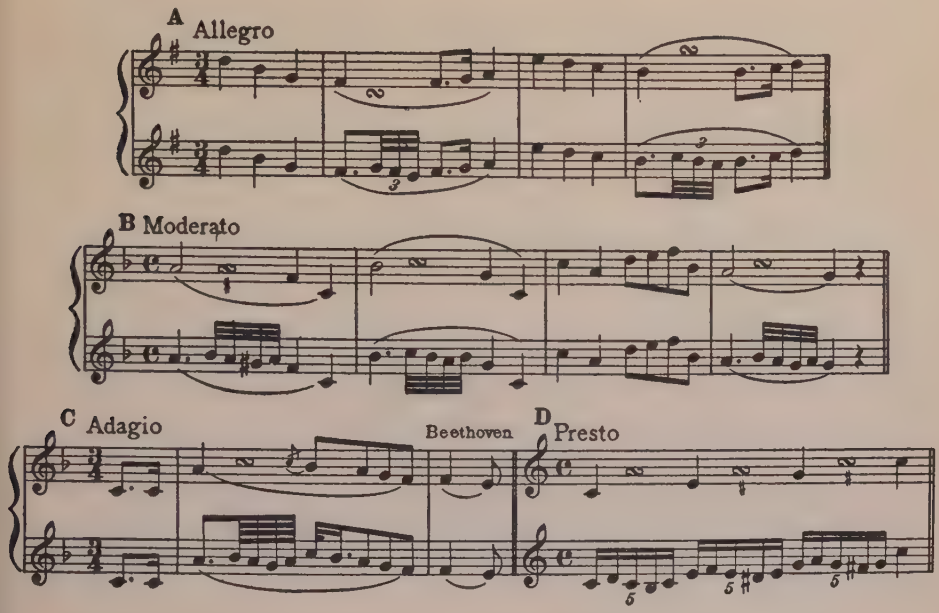
The *gruppetto* consists of three little notes (also written as sixteenths) which *precede* the melody-note; it is somewhat like a double *appoggiatura* with the difference that in this case, the principal note is inserted between the two graces, thus forming a triplet (generally of thirty seconds) which occupies the first fourth of the beat, the main note being played immediately after as a dotted-eighth which fills the remaining three-fourths.

In order to avoid writing each time the notes belonging to *gruppettos* the following sign (∞) has been adopted; it is placed above the principal note and has the same meaning; yet, it is only when the *gruppetto* should begin with the *upper* grace that the sign in question is employed; when it is the lower grace that has to be played first, the notes are usually written in full.

At times, the upper grace has to be altered chromatically, in which case a small accidental is set *above* the sign: (♯ ♭); when the same happens to the lower grace, the accidental is placed *under* the sign: (∞ ♮ ♯ ♭ ∞) and when *both* graces have to be altered, an accidental is set *above* as well as under (♯ ♭).

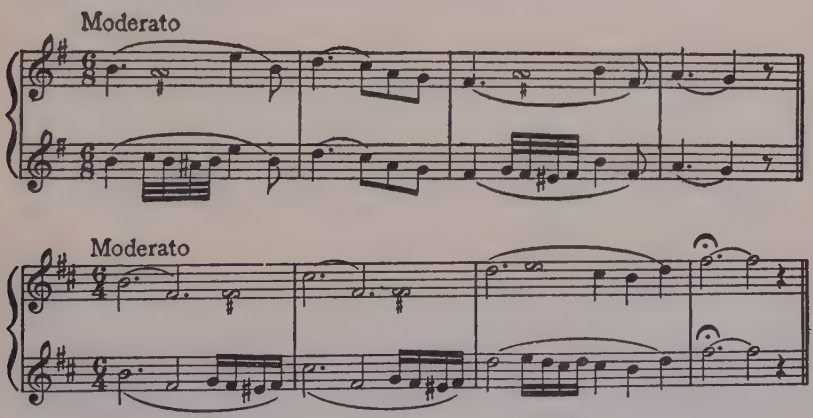
Very frequently, the *gruppetto* is placed *between* two notes of the melody, in which case it borrows its time-value from the note that *precedes* it. When these melody-notes have the same name (each occupying a different beat) the *gruppetto* consists of a triplet (generally of thirty seconds) which is executed on the last fourth of the *preceding* beat. Ex. A on next page.

On the other hand, when the two melody-notes have a *different name*, the *gruppetto* consists of *four* thirty-seconds which fill the second *half* of the *preceding* beat, that is, when the tempo is moderately fast. Ex. B.

In very slow tempo, the four notes are generally sixty-fourths which fill the last *fourth* of the preceding beat (Ex. C), while in very fast tempo, the group is sometime played as five-sixteenths spread over the whole beat. Ex. D.

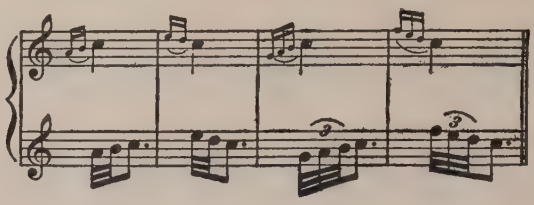


When the *gruppetto* belongs to a piece written in compound-time and is placed after the dotted-note equivalent to one beat, it consists of four notes which are played on the last third of the dotted-note in question.



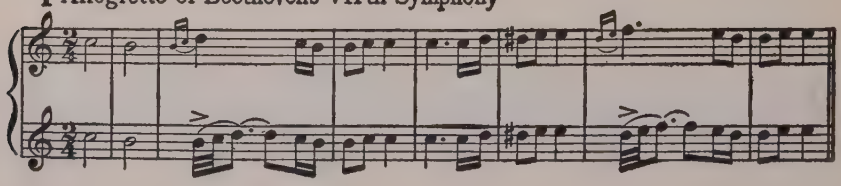
There is another variety of embellishment called *Slide* which in a way resembles the *gruppetto* as far as its execution is concerned.

It consists of the two diatonic notes which follow the principal note either above or below; the group (which sometimes contains more than two notes) always begins with the note the farther away, the result being a sort of sliding up or down to the melody-note like this:

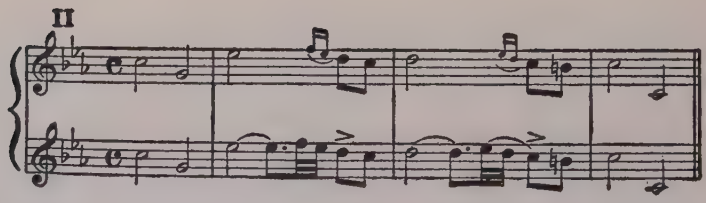


At times, the slide is played right *on the beat* occupied by the melody-note in which case it borrows its time-value from the latter, the accent being given to the first note of the group as seen in the first of the two following examples; at other times, the slide is played *just before the beat* in which case its time-value is deducted from the *preceding* melody-note, but the accent is given to the melody-note that follows as seen in the second example. Generally, the way which has to be used is indicated.

I Allegretto of Beethoven's VIIth Symphony



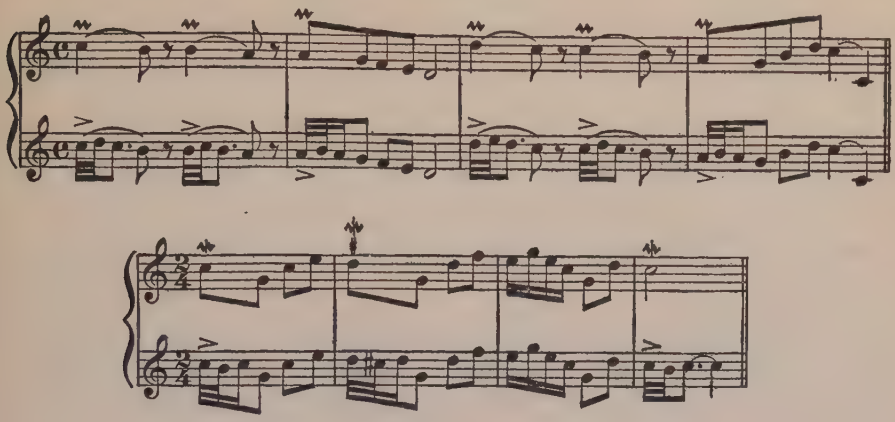
II



MORDENTE

The *mordente* consists of a principal note and one of its graces following each other in quick succession; although written as sixteenths, the two little notes are generally given the value of thirty seconds and occupy the first fourth of the beat, the main melody-note following instantly. The *mordente* has to be executed in a clear and incisive manner, the first note being strongly accented.

When the principal note has to be accompanied by its *upper* grace, the sign which indicates it is this: (𝆑) and when the *lower* grace is meant, there is a line crossing the sign like this: (𝆑)

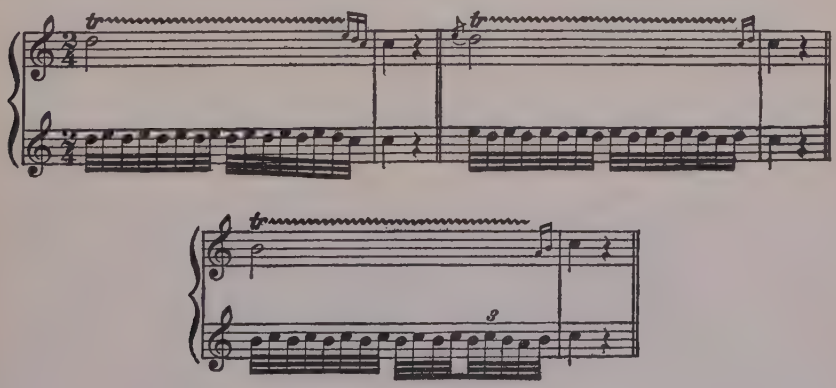


TRILL

The *trill* is the result of the rapid and even alternation of a melody-note with its *upper appoggiatura*, the oscillations being kept up for a certain length of time; it is indicated by the following abbreviation and dented line: *tr*~~~~~~ although when of short duration, the letters alone are used.

A *trill* generally begins with the principal note, but, if it has to begin with the *appoggiatura*, a little sixteenth is set before the principal note; the ending, called *after-beat*, is usually written in full.

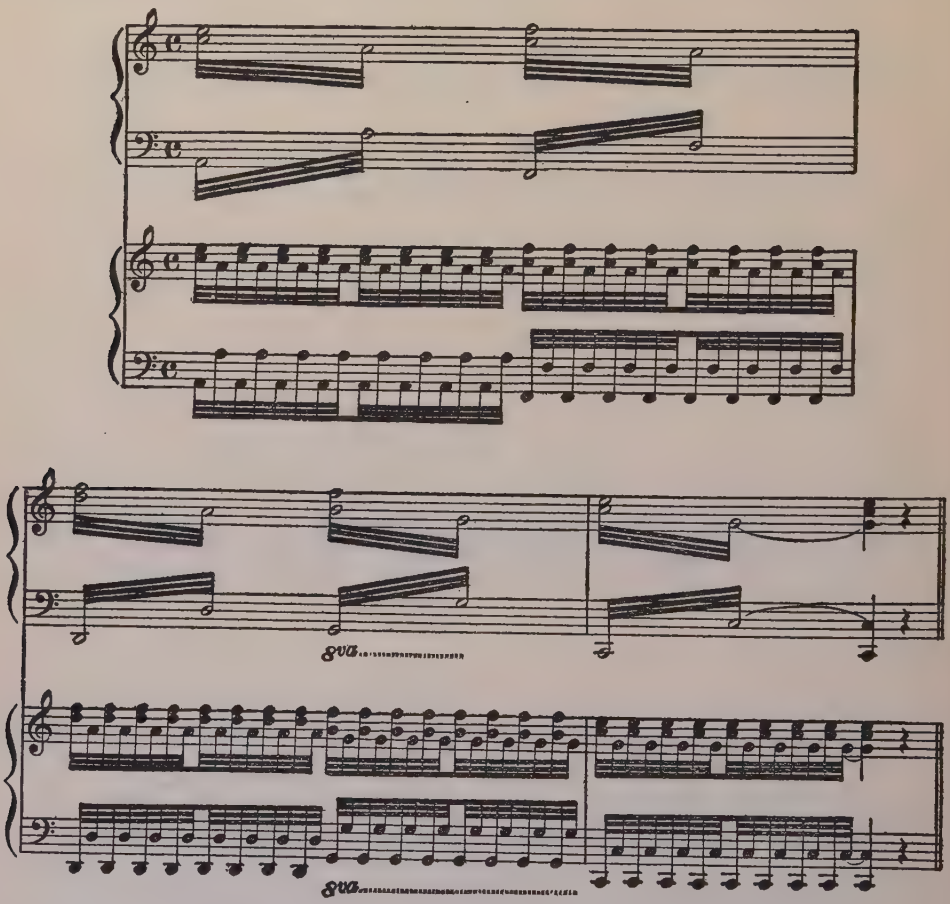
A *trill* must exactly fill out the time allotted to the principal note, being neither accelerated nor retarded although, in a slow movement like a *Largo* or an *Adagio*, it is permissible to slacken the speed toward the end.



TREMOLO

The *tremolo* is a variety of *trill* with the difference that the alternating notes are usually (in piano music) in chord-form or broken intervals (thirds,

fifths, octaves, etc.) and the oscillations stop abruptly without any after beat as seen below.



APPENDIX

A Cappella—Vocal chorus without instrumental accompaniment.
Aevia—Abbreviation of Alleluia in old Church Manuscripts.
Air-Aria—An extended vocal solo in an Opera.
Arioso-Arietta—A short Aria.
Allemande—A bright and vivacious dance of German origin in two beats.
Anthem—A piece of sacred vocal music generally founded on biblical words.
Aubade-Serenade—Originally a song with instrumental accompaniment, generally guitar or mandolin, performed early in the morning in the open air below the window of some particular person who had to be specially honored, in opposition to a Serenade which was given in the evening under the same conditions.
Ballad—A short, simple vocal melody with several stanzas and slight instrumental (piano) accompaniment. The name is often given to instrumental solos (piano, violin, etc.) in which case the composition is of much larger proportions and more elaborate style.
Ballet—Music of a light character accompanying a spectacular dance in an Opera.
Band—Name generally applied to an orchestra of wind-instruments and percussives. In a Band, the clarinets take the part which, in a symphony orchestra, is given to the violins and violas.
Barcarole—A vocal or instrumental solo imitating the song of the Venetian gondoliers.
Bel Canto—The art of beautiful and sustained singing in vogue in the 18th and 19th Centuries as opposed to the declamatory style first brought into prominence by Wagner.
Bergerette—A French pastoral song addressed or referring to a young shepherdess.
Berceuse—A cradle-song for voice or instrument.
Bolero—A Spanish dance with castanets accompaniment. When written for instrument alone, the Spanish rhythm and color are carefully preserved.
Bourrée—A French dance in rapid tempo often included in Classical Suites.
Cabaletta—A song in Rondo form with variations, often having the accompaniment in triplets.
Cadenza—An elaborate and florid passage occurring toward the end of an instrumental or vocal composition, generally with orchestral accompaniment. As a rule it is written by the composer but often is made by the instrumental soloist in order to display his or her technical ability in the most brilliant light.

Canon—Polyphonic musical imitation founded on certain rules and in which each voice, entering one after the other, repeats exactly the same melody until all the voices come together at the close; but some Canons did not have any special ending or coda and therefore could be kept up indefinitely; in such a form, they are commonly called "rounds."

The Canon was in great vogue during the medieval period, especially in England; eventually it became the parent of the Fugue.

Cantata—Usually a lengthy composition written for voices with instrumental accompaniment. It consists of chorus, solos, duets, recitatives, etc., and is generally of a religious character.

Cantilena, Canzonetta, Cavatina, Romance—Melodious songs all very much on the same order, either for voice or instrument, and having usually a sentimental strain.

Cappriccio—Short instrumental piece written in a free, unconventional style and distinguished by originality in harmony and rhythm.

Carillon—A large set of bells, each one giving a different note, originally connected with two keyboards played with fists and feet. The first Carillon was established in a small Belgian town called Alost, about the year 1485. Modern Carillons have been very much enlarged and their handling perfected to the point that, although some of them contain up to fifty bells of which the largest is sometimes eight feet in diameter, the touch required to set those huge bells in motion is little more than that of a piano keyboard, of course, they are worked by electricity. Carillon recitals are frequent in Europe.

Carol—A song of religious joy used especially to celebrate Christmas.

Chaconne—Old French dance of a moderate tempo.

Chamber-Music—Instrumental music of an intimate character especially suited to a drawing-room or small hall.

Chantey—A song sung by sailors when heaving or hauling to mark rhythm and enliven the work.

Chants—Melodies dating from the Middle Ages and still sung in the Catholic and Anglican churches. They have no special rhythm, the text is in prose and several syllables are intoned on each reciting note.

The most celebrated are the Ambrosian Chants composed by Pope St. Ambrose in the 4th Century, and the Gregorian Chants composed by Pope St. Gregory in the 7th Century.

Choir—A group of singers rendering the music incidental to a religious service.

Coda—A passage finishing a movement in an instrumental composition such as a Sonata, a Rondo, etc.

Concerto—A lengthy composition for a solo instrument with orchestral accompaniment.

Counterpoint—The art of writing music containing several parts, each being independent from the other.

Courante—An old French dance in three beats, possessing a serious character and moderate tempo, often introduced in the Suites of Classical Composers.

Czardas—A national Hungarian dance of a passionate character, capricious rhythm and tempo.

Elegy—A vocal or instrumental piece always plaintive and sorrowful.

Fantasia—A piece of instrumental music in which the composer followed his imagination, paying little attention to set rules.

Finale—The concluding movement of a Sonata, Symphony or of an act of an Opera. An operatic Finale is generally highly dramatic.

Folk-Song—A song of the people, marked with the musical characteristics belonging to that particular nation.

Fugue—A musical composition based upon a given theme called subject which is taken up by the different voices or instruments, each time in a slightly different manner as well as in different tonalities.

Galop—A lively dance in two beats originating from Hungary.

Gavotte—An old French dance of a dignified character often introduced in Classical Suites.

Gigue—A light, gay country-dance of a rapid tempo often found in Classical Suites.

Glee—A composition for three or more voices, sung without accompaniment.

Habanera—A Cuban dance in $\frac{6}{8}$ possessing a marked exotic quality as well as rhythm.

Idylle—A short composition of a pastoral, tender character and simple lines.

Impromptu—An instrumental piece of music written on the spur of the moment and which does not follow any special form—very much on the order of the Fantasia.

Improvisation—This is almost like the Impromptu except for the fact that it is composed while being executed, the artist, (always an instrumentalist) giving free flight to his imagination. Often, it is based on a theme selected by someone in the audience.

Intermezzo—Short musical movement connecting the main divisions of an instrumental or orchestral work or introduced between two acts of an Opera, such as the Intermezzo of Cavaleria Rusticana. Still, the name is often given to a piece not preceded nor followed by anything. In such a case it usually is a short composition of not much consequence, but full of spirit and dash. Richard Strauss gave the name of "Intermezzo" to a one act Opera which possesses the character just described.

Invention—A short piece built on one motive and developed in a free manner. Bach's Inventions are treasured specimens of this style of composition.

Jodler (Yodler)—A certain way of singing, characteristic to the inhabitants of the Tyrol. Its peculiarity is the sudden change from very high to very low notes.

The song itself is called "Tyrolienne" and the yodeling is introduced in the refrain.

Jota—A Spanish dance in three beats and rapid movement on the order of a Waltz but with great variety of steps, accompanied by castanets and mandolin.

Ländler—A slow German waltz.

Legend—A composition based on a poem of epic character, that is, one in which a deed of valor and heroism is related.

Leitmotiv—Principal theme of an orchestral composition or one personifying the hero, the heroine or even the villain in a musical drama, the said theme recurring every time the character in question appears or is alluded to.

It was Richard Wagner who first used "Leitmotives" in his works and they are to be found frequently in his "Ring of the Nibelungen," and his other dramas.

Libretto—The story or text to which the music of an Opera has been adapted—it is generally in rime.

Lied—A certain form of German song on the order of the Ballad in which Franz Schubert was a past master. The Lied differs from the Ballad by the fact that in it, the music follows closely the spirit of the words and varies accordingly, while in the Ballad, the same melody is applied to each stanza.

Litany—A religious song of supplication originally employed by the Church at times of danger and in which the whole population joined.

Madrigal—A part-song of an amorous, pastoral mood sung without accompaniment, very much on the order of a Motet, with the difference that the latter is religious, while the subject of the Madrigal is always worldly.

March—A composition of strongly marked rhythm in four beats and quick tempo, possessing a bright and martial character.

There are also Funeral Marches in which the tempo is considerably slower and yet whose rhythm, although solemn, is still quite decided. Beethoven's and Chopin's Funeral Marches are the best known.

Mazurka—A Polish dance in three beats in which the third beat is specially accented.

Melodrama—A spoken play of a rather tragic and sensational character with incidental music.

Melody—A tune. In part-singing it is generally carried by the highest voice, soprano or tenor.

Menuet—A stately old French dance in three beats and moderate tempo—very frequently included by Classical Composers in their Symphonies, Sonatas and Suites.

Motet—A sacred vocal composition for several voices and sung without accompaniment.

Musette—A short piece of music, gentle and soft in character which imitates the bagpipe and has a drone-bass, that is, a note, either the tonic or the dominant, which is sounded continuously right through the piece.

Nocturne—Short, dreamy, romantic instrumental piece of music originally meant to be played at night. Chopin's "Nocturnes" are the most celebrated and appeal strongly to one's emotions.

Novelette—An instrumental composition which is free in form, romantic in character and contains quite a variety of themes. Robert Schumann wrote a large number of Novelletten which are of great value.

Ode—A lyric poem set to music and expressive of lofty and fervent emotion.

Opera—A drama set to music and which is sung and acted to the accompaniment of an orchestra.

The oldest opera-score in existence is "*Euridice*" composed by Jacopo Peri in 1600 for the wedding of Maria de Medeci to Henri IV of France.

Oratorio—A lengthy composition of a dramatic character for vocal soloists and chorus with orchestra or organ accompaniment and whose text is generally taken from the Scripture.

The most renowned oratorios by Classical Composers are: the "Passion" by Johann Sebastian Bach, the "Seasons" and the "Creation" by Haydn, "The Messiah" and "Judas Maccabeus" by Händel, and "Elijah" by Mendelssohn.

Orchestra—A company of musicians playing collectively on string and wind-instruments and also instruments of percussion.

These instruments are classified in 4 main groups: (1) the *strings* (violin, viola, violoncello, double-bass); (2) the *wood-wind* (flute, piccolo, English horn, oboe, bassoon, double-bassoon, clarinet, basset-horn); (3) the *brass-wind* (French horn, trumpet, trombone, saxhorn, bass tuba, cornet); (4) the *percussives* (kettle-drums, bass drum, snare-drum, cymbals, triangle, bells, gong, castanets, etc.)

Orchestration—The art of expressing music by means of the instruments of an orchestra. The selection of the instruments which are to carry either the melody or the intermediate parts of his work requires a great deal of care and knowledge on the part of the composer in order to obtain the most effective results, and in modern music, many a time, a clever and brilliant orchestration carries to success a composition which otherwise would be doomed to utter failure owing to its lack of inspiration.

Overture—Generally understood to be the introduction to an Opera; in it, the composer frequently brings some of the themes which appear later in a more elaborate form.

Yet, the name is often given to compositions which are not followed by anything, as they are entities in themselves. Such was the Concert Overture first originated by Scarlatti and which eventually became the parent of the Symphony.

Passacaille—Stately old Italian dance very similar to the Chaconne and generally written in minor.

Passepied—An old French dance somewhat faster than the Menuet.

Pavane—Stately, dignified old Italian dance adopted by the French Court and executed at special ceremonies by the King, the Queen, Princes, Princesses, etc., all parading in the most gorgeous costumes.

Polka—A lively dance in two beats originating from Bohemia.

Polonaise—A dance of Polish origin in three beats and moderate tempo, somewhat on the order of a promenade or a march.

Potpourri—A musical medley of popular tunes or parts of tunes following each other in the most incongruous and inartistic manner.

Prelude—A piece of music introductory to another as were Bach's "Preludes," preparatory to his Fugues, or maybe a short orchestral movement preceding the act of an Opera as in Wagner's "Lohengrin." Yet, very often, the name is given to pieces that are not followed by anything, as in Chopin's "Preludes" and others.

Quartet or Quatuor—A composition written for four voices or four instruments (generally strings), also for mixed instruments in which case it is ordinarily piano, violin, viola and 'cello.

Recitative—Declamatory passage in an Opera, Oratorio or Cantata and which is devoid of melody; it is generally executed without accompaniment and in a more or less *ad libitum* tempo; its main requirement being a distinct enunciation, the vowels being "thrown forward."

Refrain—A phrase repeated at the end of each stanza in a Ballad or Roundelay.

Requiem—The musical setting to the Mass for the Dead. Mozart's last composition was a Requiem.

Rhapsodie—An instrumental Fantasia on folk-songs, Liszt's "Hungarian Rhapsodies" are the most celebrated.

Rondeau—A composition which was based on an old form of French poem of that name whose peculiarity was that the first verse was repeated at different intervals and again at the end.

In the musical Rondeau, the rules were the same; the opening theme appearing several times and once more at the close. It was Gluck who first introduced the Rondeau in his Opera, "Orfeo."

Ritornello—The solo-part of the instrumental accompaniment of a song which precedes the first stanza and every stanza thereafter and is played again after the last.

Roundelay—A song containing a refrain.

Run—A rapid scale-passage executed with great smoothness in an instrumental or a vocal composition.

Sacred-Secular Music—Music applied to devotional purposes and in reference to Spiritual Life as opposed to Secular Music which pertains to this world and the present life.

Saltarelle—An old Venetian dance in three beats of which the first was strongly accented.

Sarabande—Old Spanish dance of a serious, dignified character and slow tempo on the order of the Menuet; it was generally included in the Suites of Classical Composers. It owes its name to a Spanish dancer, Sarabanda, who first introduced it in France.

Scene—In an Opera, a division marked by the entrance or exit of one of the principal performers.

Scenario—The plot of a dramatic work as well as of an Opera.

Scherzo—An instrumental solo of a light, vivacious, piquant character, animated tempo and containing sharp contrasts in rhythm and harmony. Beethoven was the first to introduce the Scherzo in the Symphony in place of the Menuet favored and advocated by Haydn.

Score—Book containing all the vocal and instrumental parts of a composition and used by the orchestra leader while directing.

Siciliana—Dance of the peasants of Sicily having a pastoral character, generally in $\frac{6}{8}$ time and moderate tempo.

Solo—Technically, a passage to be executed alone by a single voice or a single instrument, but when in a chorus for instance, all the Tenors or the Sopranos, singing in unison, are heard above the others, or when in an orchestra, all the violins or the flutes or any other instruments take the leading part, it is also called a Solo.

Sonata—A certain form of an instrumental composition created by Clementi in the latter part of the 18th Century. A Sonata generally has three to four movements, each having a different theme, tempo, character and key-signature.

Stabat Mater—A well-known Latin Hymn on the seven woes of Mary. Several composers have set it to music, among them being Palestrina, Haydn, Pergolesi, Dvořák, but the most popular is the one by Rossini; it contains the famous "Cujus Animam" which never fails to stir the audience to a high pitch of emotion.

Suite—A series of short instrumental numbers each being in dance-form in vogue during the Classical Period at which time it was generally written for piano. Originally, the Suite comprised the following: Allemande, Courante, Sarabande and Gigue. Later, more numbers were added, some being: Bourrée, Gavotte, Menuet, Pavane, etc.

Modern Suites are generally written for orchestra but do not always contain dance-tunes.

Symphony—Orchestral composition developed from the Overture and established definitely under its new name by Haydn toward the middle of the 18th Century.

Contrary to the Overture which has only one movement the Symphony has generally four of them: (1) Allegro (often with a short and slow introduction); (2) Adagio; (3) Scherzo or Menuet; (4) Allegro or Presto.

The latest development is the Symphonic or Tone Poem originated by Liszt and which has one single movement. It is usually based either on a poem or just an idea or an event and therefore is freer in form and more romantic than the Symphony as it follows the different moods of the subject.

Tarantella—A dance of Southern Italy in $\frac{6}{8}$ time. Its peculiarity lies in the fact that the tonality changes constantly from major to minor and vice versa. Its tempo is very rapid and the general character full of brilliancy and dash.

Te Deum—Musical service of the Catholic Church given on special occasions to celebrate a great victory, the Coronation of a King or any happy national event.

Toccata—One of the oldest forms of composition for piano or organ dating from the latter part of the 16th Century. It was free in style and of a lively tempo.

Transcription—The adaptation of a composition to some voice or instrument other than the one it was originally written for.

Liszt had a regular mania for making brilliant piano transcriptions (more or less *dis*arrangements) of other composers' masterpieces; among them were Beethoven's "Symphonies," Berlioz and Wagner's "Overtures," Schubert's "Lieders" and also operatic themes by Meyerbeer, Wagner, Verdi, Gounod, etc.

Trio—A composition written either for three voices or three instruments, generally piano, violin and 'cello.

Tutti—Term indicating the entrance of the whole body of instruments or voices after a solo. Tutti in Italian means: "All."

Variations—A series of transformations of a given theme in which the harmony, melody and rhythm are each time treated in a different way, the result being that, at times, the audience has only the faintest recollection what the original theme was.

Villanelle—A pastoral poem set to music, each stanza ending always with the same refrain whose subject is more or less of an erotic character.

Waltz—Originally a Viennese dance in three beats possessing a great deal of swing but in modern times it is more generally known as an instrumental composition. It is Franz Schubert who created and glorified the Waltz in this particular form; for him, it was a medium through which his genius found free expression, resulting in hauntingly beautiful themes known as the "Deutsche Tänze." His innovation inspired many of his successors who also wrote delightful Waltzes of marked originality, but those musical gems are really not made for dancing, being too soulful and ethereal, also of too capricious a tempo.

It was Johann Strauss, the Younger (1825-1899), known as the "Waltz King" who really established the reign of the Waltz as a dance. His creations were possessed of a voluptuous and entrancing quality which appealed more decidedly to the masses and created a furor at the time. His "Blue Danube" is still a great favorite among the general public.

ABSOLUTE AND PROGRAM MUSIC

Absolute Music is that which carries its message, awakens emotions and influences the soul without the aid of any definite suggestion based on living realities, this being in direct opposition to *Program Music* which aims at describing human feelings or portraying actual scenes or events.

Most all the Symphonies of the Classical Period are written in Absolute Music except Beethoven's "Pastoral," "Eroica" and the "Ninth."

It was Liszt who first conceived the idea of taking a Poem as a basis for an orchestral composition in which the music follows the different phases of emotion.

CLASSIC, ROMANTIC, MODERN MUSIC

Classic Music is the name generally given to the works of the Masters of the 17th and 18th Centuries; its style is conventional, its strong characteristics being the frequent occurrence of the perfect cadence which creates an atmosphere of security and repose. In listening to a mixed program of entirely unknown compositions among which would be one work of that period, the latter could be singled out and classified immediately.

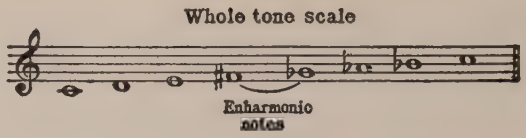
Romantic Music derives its name from a certain literary movement which took place in Germany during the latter part of the 18th Century.

At the time, musicians also had come to realize that the rigid rules of the Old School were paralyzing their flight toward higher spheres.

It was Weber (1786–1826) who first had the courage to depart from the beaten track and, in order to express himself more freely, he set aside *some* of the former traditions, thus establishing a precedent which was eagerly followed by his fellow-musicians.

It is to his broadening influence that the world owes a Schumann, a Berlioz, a Wagner, a Liszt, a Chopin, a Tschaikowsky and all the great lights which shone brightly during the last century and the beginning of the present one.

Modern Music seems to be the product of a revolt, undertaken by a certain group of musicians, against any rule whatsoever and reflects the trend of thought of the present generation. It is supposed to be based on what is called the "*whole tone scale*" illustrated here and which explains the frequency of the discords which, at times, follow each other in the most distressing manner.



This scale, containing no half-steps, does not permit any major or minor triads nor the chord of dominant seventh which, when followed by the tonic triad, gives to a phrase such a satisfying ending.

In the whole tone scale, all thirds are major (2 steps) which means that all triads are augmented being therefore fundamental discords which remain everlastingly unresolved.

Modern Music frowns at "old-fashion melody" and claims absolute freedom of expression which is all very well when one has something beautiful to express, but in any art, it takes a genius to overthrow traditions and do so in a masterly way, and it isn't *everybody* who was born with the Divine Spark.

Yet, among modernists, there are two categories: those who still are somewhat conservative and whose works are very much to be admired, and those who call themselves "futurists" and whose efforts seem to produce only *noise.*

It is rather puzzling for the student to know exactly what path to follow, but he will always be safe if he keeps in mind what is the real rôle of Music in life and which is so beautifully defined by Henry van Dyke in his poem entitled "Symphony":

"Thou lendest wings to grief to fly away
And wings to joy to reach a heavenly height;
And dumb desire that storms within the breast
Thou leadest forth to sob or sing itself to rest."